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GAS JOURNAL

LIGHT • HEAT • POWER • BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

VOL. CLXXI. No. 3247.] LONDON, AUGUST 5, 1925. [77TH YEAR. PRICE 1s.

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VOL. CLXXI., No. 3247.] WEDNESDAY, AUGUST 5, 1925. [77TH YEAR.

EDITORIAL NOTES.

The Coal Truce.

THE unremitting work of the Prime Minister in the coal wages dispute ended last Friday in an agreement which either merely defers a great calamity for the country, or paves the way to the establishing of the coal industry on a sounder basis than that which it possesses to-day. No one can yet say which is to be the end; but no man, unless he be an out-and-out revolutionary, will hope for anything but the latter issue. Immediately the news of the settlement was spread abroad, there was great satisfaction over the respite, and over the prospect of time having been obtained to make a thorough investigation of the conditions of the industry in the light of its new economic circumstances. But the satisfaction was soon followed by strong criticism of the Government in regard to the cost in money and principle to which they had committed themselves—in fact, some critics in their words showed an amount of anger which perhaps a little more thought would have mitigated. The discontent over the agreement was due to the fact that the Government had formerly set themselves (so it was believed) resolutely against any subsidizing of industry; and immediately afterwards, through the pressure of circumstances, they turned against their own resolve. The vacillation is not to the liking of many people—certainly not to their own followers; but before coming to any definite conclusion as to whether they have done rightly or wrongly, the pros and cons should be carefully weighed. The conditions which the representatives of the coal owners and the miners accepted, as the hands of the clock were within a few hours of the time of the stoppage of the pits, are that conditions of work and wages are to remain unchanged during the next nine months; and that any loss accruing to the owners, as a result of the continued operation of the 1924 agreement, is to be made good by State assistance, or "subvention" as the official report has it, which term at any rate has a better appearance than the less-liked word "subsidy," though its connotation is the same.

During the week, all methods of averting the disaster of a strike had been tried; but, one after the other, they were without avail, and fell. Only the course finally put forward by the Prime Minister succeeded; and its object is to give time for a supreme effort to put the coal industry on its legs again, and to bring what is hoped will be a lasting peace to the industry. That effort has to be made; if it fails, the responsibility will not rest upon the Government. Without time, without the course adopted, this supreme effort could not be made. And it must be made, through the Royal Commission which is going to be set-up. If that one fact is taken into consideration, we think the critics will deliberate over the matter with cooler heads. We are as firmly against State subsidies for industry as anyone; but conditions arise when drastic remedies have to be applied. And in our view this is one of those conditions, and the time is peculiar and unprecedented. No one yet knows what this is going to cost the country. Estimates are, unless things change much for the better, that the nine months' truce will require from the State something like 10 million pounds sterling. This is called a new burden for the taxpayer; there is no disputing the fact that it will have to come largely out of the pockets of other industries. The burden, however, will be small compared with what the taxpayers had, directly and indirectly, to bear as the result of the last coal strike. It is probably small compared with the cost the taxpayer would have had to bear during the next few months, had there been a strike. The actual sum that will have to be paid will only be ascertained as we go along. No one can tell what will be the actual course of trade, or whether some coal districts will do better or worse financially than they have recently. When we bear in mind the stocks of coal in this country and on the Continent, and the surplus productions abroad, the outlook is not hopeful for better conditions. Of this we may be assured, that after the present outburst over the subvention to the coal industry, the Government will not dream of rendering financial assistance to the electricity industry.

However, another justification for what the Government have done after grave deliberation and anxious discussions, and only as a *dernier ressort*, is that the coal industry stands apart from all others in being purely basic in and to the country's interests; and therefore nothing—excepting capitulation to tyranny and force, or an overwhelming burden in other ways—should be allowed to stand in the path of an ultimate effort to bring the industry into a sound economic condition. So much depends upon this. Before we came to the critical position of last Thursday and Friday, the Government had had the report of their Court of Inquiry; and they could not ignore their findings, although the Committee had only had before them *ex parte* evidence which actually gave more weight to the findings and recommendations, one of which was the need, in the interests of the country, for a searching investigation into the whole position of the industry. The report was distinctly favourable to the miners in respect of wages, although the Government had been charged with appointing a Committee for the express purpose of obtaining support for the coal owners. In fact, the report absolutely confounded the rabid disciples of revolutionary method, and those who fancy that the present Government are not for the people, but for a class. The only criticism that we would here make of the report is that the members of the Court were not so emphatic as they might have been on the points that the coal industry is overmanned, and that if the production per shift per economically employable man was equivalent to that of 1913, the conditions of the industry would assume a vastly different complexion. Then there was the new quadruple Alliance and the support of the miners by the General Council of the Trade Union Congress. The new Alliance has not been set up in the interests of peace, but in order to use combined power to endeavour to enforce on the country the will of the socialist ruled trade unions, whether or not in the national interests. The first use of this combination of power was to be made, on behalf of the miners, by the railway and transport men, through the prohibition of any movement of coal from one place to another where it could be used—thus probably preventing men in other industries from pursuing their employment, and other people from having necessaries to their very existence. We should not applaud a Government who

in any way bowed down to, or were swayed by, such tyrannical measures or threats; and we should be sorry to think that this was even a factor in the decision of the Government to adopt means to enable investigation to be made by a Royal Commission as recommended by the Court of Inquiry. The Imperial Government must not be governed by the trade unions; there are other people besides trade unionists who have a right to live. Nevertheless, the nature of the support that was to be given to the miners will be a warning for the future, should unfortunate failure be the result of the expensive and larger effort—a warning to have betimes the necessary stocks of coal at the spots where they are required.

This brings us to the other side of the picture. There is no guarantee that the great expenditure of money and the supreme effort will be successful. May 1 next may see the country in precisely the same position as it was last Friday. It is all a huge speculation; and next spring we may have the strike from which the country has only just escaped by a hair's breadth. We are not intending to be pessimistic; but we cannot say, looking over the events of the past few weeks, and the respective attitude of the parties to the coal dispute, that much is found which inspires large confidence. It is clear to all that the miners and their allies had completely laid their plans for the purpose of bringing unprecedented pressure upon the country; but if a strike there is to be, the conditions are better now than they will probably be next spring after the winter's fuel consumption. Nine months may seem a long time, but it will be a busy period; and until the country is out of this particular wood, prudence must be continued by the heavy users of coal. Another consideration in this relation is that, the Government having created the precedent of financial assistance to an industry, there are bound to be other industries and public services the unions associated with which will be urging that what was done for the miners should be done for them. Of course, the reply will be that the mining industry is in a position different from all others; and it is the one industry upon which, more than any other, the country depends. The argument is good, but it will not prevent endeavour on the part of other industrial labour agencies, and perhaps awkward trouble. But we think the Government may be trusted not to depart again from the principle of declining State-aid to industries. It is wrong and indefensible. But we do feel that, if ever there was good reason for temporary aid in an effort to secure a permanent remodelling of conditions for our chief fundamental industry, that time is now. We hope May day next year will see complete justification of the present action of the Government; and then those who now criticize on mere superficial reasoning may find more solid grounds for blessing the Government for their prescience. One of the primary conditions that the gas industry requires, for its success, is continuity of peace in the coal industry.

Gas and Coke from Coke-Oven Plants.

In the course of the Leeds symposium on coking practice, at which Prof. John W. Cobb presided, the shrewd advice was given by Sir Arthur Duckham to coke-oven and gas managers to get together and take counsel with each other. They have interests which have much in common; and they have, if they wish to be mutually helpful, various difficulties and requirements which they should attempt to thresh out. The advice was tendered by Sir Arthur during the discussion of a paper by Mr. C. P. Finn, which advocated a larger utilization for town supply of the gas from coke-ovens. The author instanced the successful applications in this country; but these are in volume insignificant compared with what is being done in America, Germany, and elsewhere. But the utilization of coke-oven gas is only one of the subjects in which the managers of coke-oven plants and gas-works are mutually concerned. Another is that the coke-ovens—and no one can object to the owners utilizing the plants to the best advantage—are being used for the making of not only metallurgical coke, but domestic coke or smokeless fuel. That is a development which the gas industry does not seem to have grasped completely—at any rate, it does not appear to have realized its full import. These two matters should be thoroughly discussed by the technical and commercial men in both industries.

Regarding the utilization of coke-oven gas by gas undertakings for public supply, there is a fairly considerable quantity being distributed to-day; and much more will be purchased for this purpose in future. Nothing can stop the development. Gas men are largely in favour of the co-ordination of the use of fuel in order to conserve coal. They advocate the use of gas coke for electricity generating stations; and they can show good cause for this being done. They proclaim the economical advantages of using town gas and coke for industrial purposes in lieu of coal. While they do this, they cannot ignore the claims of one of the secondary products of coke-oven plants—gas—to consideration in the new scheme of fuel utilization which is at present being built-up; and the proper channels to develop this most economically are through the gas undertakings in proximity to the coking plants. However, while admittedly there will be important enlargement of this business, coke-oven gas in town supply must, unless something can be done to ensure continuity of supply, always be regarded as nothing more than an auxiliary. There is little, if anything, to complain of in respect of the composition and the calorific value of the supply. But the matter that gives most concern is reliability; and this is affected by—first, the demand for coke, and, secondly, labour disturbances. Sir Arthur Duckham, Mr. W. J. A. Butterfield, Dr. E. W. Smith, and others pointed out, as has been done many times since this matter was originally brought forward as one of practical politics, that the defect of unreliability involves questions of serious moment. In the first place, gas undertakings have responsibilities and obligations of first-rate order imposed upon them by Act of Parliament; and, above all things, a public service must have constancy. The absence of confidence in this regard necessitates an investigation of a critical character into the balance of economy. Reliability of, and responsibility for, continuity of supply—and this applies with special force now that the therm system is in operation—involve the provision of surplus plant at the gas-works adequate to meet any stoppage of the auxiliary coke-oven supply; and the capital and maintenance costs of such plant are not negligible. The greater the patronage of coke-oven gas, the greater must be the capacity of the spare plant to meet any interruption of the supply from the coke-ovens.

Why should not this phase of the question, combined with the demand for metallurgical coke, lead to other developments? Mr. Butterfield indicated a possible one. Mentioning that the public service of the gas industry must not be jeopardized through the falling-off of the demand for the products of another industry or through labour disturbances, he stated that there was a movement in some districts on the part of gas undertakings to establish coke-oven plants at their own works, or, what seemed more promising, to take charge of the coke-oven plants close by, in order that they might have control of the gas production. To his mind, it is unthinkable that large reserve plants should be maintained on a gas-works only to be brought into action when there happens to be an interruption of the coke-oven supply of gas. That is one direction of economy in this connection. What, therefore, is necessary is not only the co-ordination of use to effect greater efficiency in the employment of our fuel resources, but, so far as the relations in respect of coking plants and gas-works are concerned, the co-ordination of the conditions attaching to the operation of the sources of supply. The only effective way of co-ordinating those conditions in this instance would be for the coke-oven plants from which gas is taken for public supply to be worked by the gas undertakings, and by men who are under the same Union regulations and conditions as the men at the gas-works. Will that ever come to pass? In view of the claims of the Miners' Federation that the finances of bye-product plants should be incorporated in those of the mines, the independence of such plants might be an advantage rather than otherwise to the present owners.

Coming to the newer development to which Sir Arthur Duckham made reference—that is, the provision by coke-

oven plants of a smokeless fuel for domestic use, instead of confining them to the production of metallurgical coke. It is easy to see that this development provides the coking plant with greater latitude, which would give better assurance of continuity of gas supply. But here we have an advantage in respect of gas off-set by the disadvantage of a new competitor in the domestic field for coke. This is the other matter which gas engineers should consider very carefully, and particularly in respect of the quality of the domestic coke produced at the coke-ovens. There is an amount of warning over this in the remarks of Mr. Butterfield. We are well aware that in the gas industry study is being made of the blending of coals, and their better preparation for the purposes of gas and coke production. What, however, the gas industry is considering is already, to a large extent, an accomplished fact in the coke-oven industry. Mr. Butterfield pointed out that the domestic coke from coke-ovens is in many respects, and in many districts, more suitable than gas-works coke for household purposes. That statement should be seriously weighed. The superiority is largely due to the better selection by the coke-oven managers of the coal they use, and the better blending of the coal which they carbonize, with the express purpose of producing a suitable coke for the market they have in view. There is warning in this; and it cannot be too thoroughly impressed upon the gas industry.

In addition to blending coals, the coke-oven industry does a great deal more than the gas industry in its cleansing, in order to reduce the ash in the resultant coke. We are in agreement with Prof. Cobb that the question of how to make a really good and satisfactory solid smokeless fuel by carbonization is a problem of urgency and of primary and fundamental importance. There is no doubt that insufficient study has been made by the gas industry of what is possible in this direction. The very foundations have still to be explored to determine the factors which determine the structure and properties of coke, and its production. In the effect of ash, we have one factor which is very potent—in fact, surprisingly so—and one which has been almost completely ignored. It is because of this that we welcome the work which is now being done in connection with the Gas Research Fellowship, because there is no question that this matter of ash is one which can be studied usefully in the laboratory, whatever may be done on the large scale afterwards. The report which was made on the subject at the recent annual meeting of the Institution of Gas Engineers is being followed by an investigation by the Gas Research Fellow into the determination of the influence of ash in gasification—for example, in water-gas production—and as regards nitrogen and sulphur. How great is that influence? So far as we are aware, nobody knows; but it is very essential to find out. There is again the further question as to the best size of coke for use in a water-gas generator. This is an exceedingly interesting point for determination with an apparatus where the actual size of coke in bulk can be controlled; and it certainly represents the kind of works experiment to which such laboratory experiments as that of the Gas Research Fellow can only point the way.

Manufacturing and Sales Data for 1924

CONGRATULATIONS are due to the Board of Trade on the expedition with which they have issued Part I. of the Returns for 1924 relating to Statutory Gas Undertakings. This section gives the statistics as to the manufacturing operations and sales of gas; and the financial particulars will appear, as usual, in Part II. In a preface to the many pages of data, information is supplied which shows, in the first place, how the process of absorption is diminishing the number of statutory concerns, which diminution the additions made by non-statutory undertakings being raised to the status of statutory ones does not counterbalance. For example, in 1923 there were 790 statutory concerns dealt with in the Returns; in 1924, although six undertakings obtained parliamentary powers, the total number of statutory concerns was, on balance, 784. The absorptions were by the Sheffield Gas Company of the Dronfield undertaking; by the Brentford Company of the Harrow and Stanmore and Richmond Companies; by the Bedford Gas Company of the Kempston undertaking; by the Uxbridge, &c., Company, of the Maidenhead undertaking; and by the Yorktown and Blackwater Company of the Twyford (Berks) undertaking. The Hatfield (Yorks) and Montgomery undertakings are now regarded as unauthorized; and the five undertakings of the Stoke-on-Trent Corporation have been amalgamated into one concern. All this represents a loss to the Returns of twelve undertakings; but *per contra*, we have new arrivals in the Penryn Gas Company, the Wirksworth Gas Company, the Oldmeldrum Corporation, and three undertakings owned by the Lanarkshire County Council—viz., Cleland and Omoa, Newarthill, and Stonehouse.

Turning to the data given in the comparative table of the totals for the past five years, we have again the satisfaction of looking upon a year which, both in manufacture and in development of gas trading, was of a highly successful order. Dealing in the first place with the manufacturing operations, it is seen that the 784 statutory undertakings (company and municipal) carbonized 17,329,180 tons, which is an increase on 1923 of 868,548 tons. Five years ago (in 1920) the statutory undertakings carbonized 17,566,316 tons—more than in 1924 by 237,136 tons, although the coal gas made last year was 231,886,036,000 c.ft., or 17,182,918,000 c.ft. more than the production of 1920 from a larger quantity of coal. This is very gratifying, for, although it is impossible in the present state of the application of the therm system to put a thermal value upon these production figures, it is easy to see, by assuming an average calorific value per cubic foot, that the 1924 working results represent good technical progress. The production of coal gas last year was 14,129,306,000 c.ft. more than in the preceding twelve months; and the average make per ton last year was 13,381 c.ft., as compared with 13,228 c.ft. in 1923, and 12,222 c.ft. in 1920. As to water gas, the quantity of coke used in its production last year was 976,366 tons, or more than in 1923 by 69,649 tons. The consumption of oil became 45,460,609 gallons; being 2,708,965 gallons more than in 1923. From these materials 39,268,220,000 c.ft. of water gas were produced—an increase of 920,577,000 c.ft. Under the heading of "Other Gas," there was an additional production of 326,420,000 c.ft. Adding together these increases of coal gas, water gas, and "other gas," we have a total additional make during the year of 15,376,303,000 c.ft., or 5·9 p.ct. in excess of the quantity produced in 1923; the increase being almost double that of 1923 over 1922. The total quantity of gas made in 1924 was 275,225,839,000 c.ft.; in 1923 it was 259,849,536,000 c.ft. Compared with 1920, the production last year was more by 18,248,095,000 c.ft. The production of water gas last year represented 16·9 p.ct. of the coal gas made. Although there is no particular value in the calculation in view of the large amount of blue water gas produced, we see, averaging the gallons of oil used per 1000 c.ft. of water gas made, that last year 1·15 gallons were employed, as compared with 1·11 gallons in 1923. Having regard to the blue water gas made, it is obvious that these percentages would be much higher on the average if applied only to the water gas actually carburetted. But we think there is indication in the figures that gas engineers are, in comparison with a few years ago, utilizing somewhat more oil per 1000 c.ft. owing to the salutary protective effect it has upon the distribution system and the meters. The quantity of coke and breeze made last year was 11,657,465 tons, which was an increase of 559,296 tons on 1923. The yield of tar was 195,257,278 gallons, or an increase of 13,294,704 gallons. The sulphate of ammonia made was 124,737 tons—an increase of 7571 tons. Of course, these various increases are due partly to the extra quantity of coal carbonized, and partly to more efficient working in respect of fuel consumption and sulphate production.

Coming to the trading section of the statistics, gas sales show up magnificently; and they clearly assert that the tide of gas demand is flowing generally through the country. It is seen that the quantity of gas sold during 1924 was 256,891,922,000 c.ft., which is an increase of 15,265,319,000 c.ft. upon the sales of 1923. It is interesting to see how this increase in consumption was distributed. Ordinary and power consumers accounted

for 8,492,206,000 c.ft.; prepayment consumers for 6,135,565,000 c.ft., and public lamps 637,548,000 c.ft. These figures testify to a very healthy development in all sections of the gas business; and there is confirmation in the increase of the number of consumers connected with the mains. The total number of ordinary and prepayment consumers last year was 7,993,786—an increase of 183,436 on 1923. The ordinary consumers last year numbered 3,653,203, or 74,096 more. The prepayment consumers numbered 4,340,583, or 109,340 more. If for interest the approximately 8 million consumers of last year is multiplied by five—representing the average number in a family—the result indicates that some 40 millions of the total population of the country are served by gas. As a matter of fact, every person in the country, in some way or other through manufacture and trade, derives benefit from gas service. Another interesting feature is that the length of mains is now 41,985 miles, which is an addition during 1924 of 1000¾ miles. If the secondary products could tell a like tale to the gas trading, the industry would never have been more prosperous.

Coke Competition.

Last Friday saw the close of the period allowed for the submission of papers for the Coke Competition. The extension of time that was granted was well justified, for it brought an additional five contributions to Section I., two to Section II., and four to Section III. The total result is 58 papers—viz., 16 in Section I.; 15 in Section II.; and 27 in Section III. The judges are, as opportunity allows, individually proceeding with the reading of the whole of the papers before meeting finally to determine the awards. With their other duties, this will take some time, so that there must be patience on the part of contributors before an announcement can be made as to the successful papers.

Government Electricity Scheme.

According to a Parliamentary authority, it does not appear that the electricity supply scheme will after all be taken in hand by Parliament during the coming autumn. The Committee of the Cabinet over which Sir Douglas Hogg (the Attorney-General) has been presiding, has been considering for some weeks past the scheme presented by Lord Weir, Lord Forres, and Sir Hardman Lever. As a result of their deliberations, they prepared a memorandum for submission to the Cabinet. This, it is believed, generally approves of the scheme. It is, however, recognized that, in the early stages, a heavy expenditure will be entailed; and, in consequence (so report runs), it is recommended that the proposals should not be proceeded with during the current financial year. Reports bearing upon this matter of the Government electricity scheme have previously proved erroneous; but in this case the Parliamentary Correspondent appears fairly certain of his facts.

County Councils and Mains in Highways.

County councils appear almost unanimously to have come to the conclusion that they require protection against the road operations of gas undertakings, and that they are privileged to over-ride the general law. In this they are mistaken. The National Gas Council have frequently emphasized the necessity on the part of gas undertakings of giving nothing away beyond that to which the councils are legitimately entitled, either by accepting protective clauses which infringe rights, or agreeing to concession in order to avoid hostility. In all cases where there is any attempt to secure extraordinary conditions, communication should be established at once with the National Gas Council. A case which is just now causing some interest is that of an area extension Special Order of the Northampton Gas Company. The County Council are trying to get certain protective clauses inserted; but a curious point is that, although the local Electric Light and Power Company obtained a Special Order last year for practically the same area, there was no suggestion on the part of the County Council that they should have protective clauses. The reason for such preferential treatment is not apparent; but it is hoped no contest will be necessary while the conference is pending between highway authorities and public utility associations with the view of endeavouring to agree a clause defining the position on the question of mains and cables in highways. Meanwhile, too, the Cumberland County Council have proposed conditions and regulations for the reinstatement of trenches on county main roads; but no gas undertaking, we hope, will be so foolish as to accept them. Practically every clause assails rights conferred by the Gas-Works Clauses Act; they are altogether unreasonable. Since writing the foregoing, the Special Orders Committee of the House of Lords have decided to report to the House in favour of further inquiry into the Northampton Gas Order. The County Council contend that much change has occurred in the construction and usage of roads since the Gas-Works Clauses Act was passed.

Revision of Standard Prices.

Writing to the "Financial Times," a correspondent, using the *nom de plume* "Geyser," calls attention to recent statements, before a House of Lords Committee, by Mr. C. D. Johnson, the Comptroller of the London County Council [see "JOURNAL," p. 237]. Replying to questions by Sir Lynden Macassey, Mr. Johnson said he saw no reason why the Gas Light and Coke Company should not apply for another revision of the standard price. He agreed it was inconvenient at the moment, and explained that, had it been clear in 1923 that costs would rise again between then and now, the standard price of the Gas Light and Coke Company would no doubt have been fixed at more than 11d. "Geyser" supposes that the "inconvenience" alluded to is caused because it is not possible until the end of a financial year to submit figures to the Board of Trade upon which a necessary adjustment of the standard price could be made. He considers that this, and the recent success of a County Council in obtaining a reduction of the Tottenham Gas Company's standard price only a few weeks before the Company were, with most others, forced to raise the charge for gas—although the increase in working costs was foreshadowed in the evidence given at the inquiry—points to a weakness in the Gas Regulation Act which calls for amendment. Whatever the "inconvenience," he holds that it cannot compare with that suffered by gas stockholders in receipt of smaller dividends for no fair reason; and, in face of the admission of the Comptroller of the "L.C.C." that, could the advance in costs have been foreseen, the Gas Light standard would not have been so much reduced, it would appear that unnecessary and inequitable changes in dividends can frequently come about because a previous year's figures cannot always reflect the circumstances of the time at which the change is made.

PERSONAL.

At a by-election in the Central Ward of the Borough of Aldershot, Mr. R. W. EDWARDS (Chairman and Managing Director of the Aldershot Gas, Water, and District Lighting Company) has been elected by a large majority. He polled 543 votes, while the figures of his two opponents were 173 and 138 respectively. It is recognized that Mr. Edwards will prove a source of strength to the Borough Council. As a local paper remarked previous to the election, "his long association with Aldershot, his known ability and wide vision, his unique experience at the head of the largest industrial concern in the district, which has progressed so amazingly under his able guidance, and his invariable courtesy, are qualities that would give to his services on the Council a distinctive value such as any town would be glad to have."

To succeed Mr. T. Banbury Ball, whose resignation recently took place in circumstances fully set forth at the time, Mr. HAROLD SHEWRING, Manager of the Meadow Lane Gas-Works of the Leeds Corporation, has been appointed Manager of the Rochdale Corporation Gas-Works. Mr. Shewring received his early training at West Bromwich, under Mr. H. E. Copp, to whom he subsequently became Junior Assistant. He has been about six years at Leeds, previous to which he was Assistant Gas Engineer and Manager at Warrington, to which he was appointed on his discharge from the Army in 1917.

Mr. STANLEY BENNET, of Messrs. Alder & Mackay, Ltd., youngest son of the late Mr. John H. Bennet and Mrs. Bennet, of "St. Heliers," Hermitage Gardens, Edinburgh, was married on July 30 to Marion Gibson, elder daughter of Mr. and Mrs. William Richardson, of Edinburgh.

The friends of Mr. J. S. BURGOYNE, of Stoke Prior, Bromsgrove, will be interested to know he has joined the staff of the Wellington Tube Works, Ltd., of Great Bridge, Staffs.

ELECTRICITY SUPPLY MEMORANDA.

THERE has recently been at Wembley an International Conference of Women in Science, Industry, and Commerce. The Electrical Development Association entertained at luncheon the ladies attending the conference. The Duke and Duchess of York were present; and Lady Astor presided. The Women's Engineering Association convened the conference, in conjunction with various other scientific and industrial organizations of which women are members, including the Electrical Association for Women. Among the subjects dealt with, in written communications by ladies, were "Vehicle Head Lamps," "Electricity in Mines," "Welfare and Factory Inspection," and "Producing and Distributing Electricity." This is a curious assortment for ladies; but the treatment was good. The last-named paper was by Miss M. Partridge, B.Sc., and the discussion was by ladies, with a few remarks by Mr. L. L. Robinson, of Hackney, who used to quote from a book of words by contented consumers. If we understand Miss Partridge correctly, she blames gas undertakings for interposing themselves in the way of standardizing the practice of providing light, heat, and power services in houses—we suppose there should be added to this, "by the electrical way." She regards it as unfortunate that electricity and gas undertakings are in fierce competition. Another thing that is "unfortunate" is that electricity and gas undertakings are nearly always represented by different financial interests. If this were not so, she thinks there is no doubt that more might be done in the way of either making the service installation a standard and necessary part of the house equipment, chargeable to the landlord, and recoverable by an equitable rent return, or else giving the tenant who paid for the installation the possession of it, so that he would be at liberty to sell it at a valuation to either landlord or incoming tenant when he completed his occupancy of the house. We, too, think it a pity that the gas and electricity undertakings are represented by different financial interests. It would have been much more economical from the point of view of the country if the two services had been developed under the same auspices; but, as it is, it is a good thing there is competition, from which the public benefit. The advantages derived from it are, in fact, of far greater importance to the community than would be the standardizing of the practice of providing light, heat, and power services in houses—according to an electrical formula. Miss Partridge indulges in a little flight of the imagination. According to her, gas companies often "give away" everything excepting the gas. If this were true, then a large part of what they "give away" must be included in the charge for gas. It therefore in the end comes to the same thing. Nevertheless, if true, it is a pity, because, if there was a direct charge for the appliances, the price per therm could come down enormously. Therefore what Miss Partridge alleges would be rather foolish. But, of course, that sort of so-called "practice" only obtains in a very few isolated cases; and so "often practically give away" is an inexactitude of the first order. Miss Partridge evidently recommends the policy to electricity concerns, for she cites a case of one electricity company which made a present of three lighting points and one heating point in some houses. This pleased the tenants, who "usually willingly paid for a few necessary extra lighting points." The money for the "present" had to come from somewhere; and where but from the lighting consumer's payment for current? Hire purchase terms also get over part of the difficulty. But, she adds, plumbing is not carried out in this way; it is part of the building, as electric power should be. The two things have no congruity. There is no competition in water supply. There is in light, heat, and power; and tenants have their own preferences in respect of them, and therefore desire, as they have to pay, to retain the liberty of placing their patronage where they think fit. We do not blame them. Electricity is a frightfully expensive means of heating.

Difficulties Through Gas Competition.

The Electric Cooker.

Electrical experts are evidently not satisfied that all is well with the electric cooker, even at the present stage of development. In an editorial article in the "Electrical Review," the sage advice is given that, if the makers of electric cookers would get together, and agree upon a few fundamental standards, a great deal of future trouble would be avoided, and their business would be benefited. It is pointed out that while the rating of hob fittings is approaching uniformity, the sizes and loadings of ovens, the dimensions of plugs and sockets for heating elements, the diameters of boiling-plate apertures and the size of hobs, could be standardized much more readily now than in a few years' time. It is added that "if the makers will remember that the important thing is to make it easy for the public to use electric cookers, and will act accordingly, they will do the best for themselves and the public. What is wanted is team work." This merely confirms the well-known fact that the electric cooker is not yet a thing of perfection, although work has been consistently concentrated upon it for (say) thirty years and more. But we must not throw stones. Though gas cookers are simpler in their organism than electric cookers, it is only in comparatively recent years that various details have been discovered to be capable of improvement—which has done much to raise to an unexpected degree economies and efficiencies. But apart from the good efficiencies, economy, and range of convenience of gas cookers, they have no fuses to go wrong, and no elements to deteriorate, and their users are so accustomed to their reliability that the few who are tempted to turn aside and try electric cookers soon get disgusted with their inconstancy, and devoutly wish they had never listened to vilifying tales of the gas cooker, and beguiling stories of the unsullied excellencies of the electric cooker. It is wonderful how experience alters knowledge.

Domestic Electric Water Heating.

The difficulties of the electricity industry in making provision for domestic water heating seem to be unending. We have been reading some notes on the subject in "Trade Talk" in "Electrical Industries," and it is obvious that the opinion of the writer is that the best electrical method of hot water supply for the householder is not the best for the supply undertaking. The latter naturally looks with favour on a system which employs a central tank fitted with an immersion heater of comparatively low loading, in conjunction with a thermostat. In this case, the heating process is a gradual one, and heat loss is constantly proceeding—at the consumer's expense. The current for raising the temperature, and maintaining it at a predetermined level, trickles in throughout the twenty-four hours. A demand of this nature is regarded by electricity suppliers as ideal; and, in order to obtain it, they are willing to supply the current at a low cost per KW.-H. The point of view of the user is entirely opposed to these conditions. A householder does not want to wait several hours before he can get an adequate supply of water at a temperature satisfactory for (say) a bath. Moreover, the requirements of a household for hot water vary from day to day; and thus provision has to be made for the probable maximum requirement, which means that on some days the supply given would be at a cost wholly out of harmony with the amount of water needed. On the other hand, too low an average supply would result in complaints that insufficient hot water is available. Another offence of this central system of hot water supply is that the conducting pipes are great wasters of heat, especially in the case of long runs, and thus the costs are further wastefully increased. The alternative to the tank storage system is the electric geyser; and this takes a large amount of current for a short period. As is pointed out in the notes before us, this tends to upset the load factor of an undertaking, and electric suppliers would not require much of this sort of custom to make them heartily sick of it.

Points from Experience.

With the changing circumstances of electricity undertakings—such as the taking-over of small outlying electricity concerns, and giving supplies in bulk to other authorities—some concerns are showing good increases in business. Take Brighton, for example, the increase last year was 15½ p.ct., or 2,455,760 units; but the increase in bulk supply was from 1,385,759 to 2,058,407 units. The Rottingdean Company's undertaking has also been acquired by the Corporation. The surplus on the year's working was £23,646. A point is made of the fact that the expenditure of fuel per unit sold has fallen from 4·17 lbs. to 3·65 lbs.—the decrease being due to the more efficient operation of the new boilers and turbo alternator which came into commission during the latter half of the year, together with a slightly improved load factor. The cost of fuel (coal and oil), averaging 28s. 4½d. per ton, showed a reduction of 4s. 7½d. per ton on last year's figures. The saving in weight and the reduced price diminished the fuel costs per unit sold from 0·74d. to 0·56d., or 0·18d. The 3·65 lbs., assuming the coal has a calorific value of 12,500 B.Th.U. per lb., represents an efficiency of only 7·4 p.ct. During the year 1276 consumers were connected. Mr. John Christie, the Manager, pleads for every possible encouragement for heating and cooking; and he thinks that, when the undertaking is able further to reduce its charges for this business, the consumption will show a rapid increase under this heading. Many electricity undertakings now hire-out motors. Mr. Christie reports that at the end of the year the undertaking had 6945 H.P. connected, of which 1437 H.P. is hired-out by the department. When will more gas undertakings hire-out gas-engines, and realize the big consumption that is to be obtained per engine working on a good and constant load?

Unsafety of Electricity.

On Sunday morning last week, Rotherham lost through fire its public library, or the greater part of it; the damage done being estimated at between £25,000 and £30,000. The fire originated towards the top of the building, and (so the newspaper report runs) "was caused, it is thought, by the

fusing of an electric wire." It is interesting to note that the fire occurred early on Sunday morning, and broke out near the top of the building. We have no doubt that when electricity was adopted for lighting the public library, the point was made that the bindings of the books would not be destroyed; but it seems from this case that electricity uses speedy means of bringing about the destruction of books. We have in our library volumes of the "JOURNAL" over 70 years of age, and are only now thinking of having some of the bindings overhauled. At a recent fire in a hop warehouse at St. Katherine's Dock, the firemen reported receiving electric shocks in the basement. It was found that a waterproof sheet had come in contact with a lighting wire; and the water had acted as a conductor. Thomas Thomson was electrocuted last Saturday week at a generating station at Kelty while engaged on repair work. Lately at the Staveley Works, Chesterfield, a man was found lying with his hand on the switch of an electric motor. The current was immediately cut off; and artificial respiration was tried for two hours, but without success. It was discovered that there was a leakage in one of the rods inside the switch. The earth wire had been broken, and had evidently been twisted together by an amateur, without reporting it to the engineer. Andrew Jones, on July 17, came to an untimely end while repairing an overhead transmission line at Pentre. The stream of testimony denying the "safety" of electricity shows no sign of abatement.

GAS EXAMINATION PRIZE WINNERS.

There has been forwarded to us by Mr. Walter T. Dunn the following list of names of the prize winners in connection with the recent examinations of the City and Guilds of London Institute. The winners of the special prizes offered by the Society of British Gas Industries were announced on p. 273 of last week's "JOURNAL."

GAS-WORKS PRACTICE—FINAL.

First Prize, Silver Medal.

Challinor, Alfred Thomas, examined at Stoke-on-Trent.

Second Prize, Silver Medal.

Agent, Lionel Saxby, examined at East Ham.

GAS-WORKS PRACTICE—GRADE I.

First Prize, Bronze Medal.

Johnstone, Stephen Cranshaw, examined at Glasgow.

GAS SUPPLY PRACTICE—FINAL.

First Prize, Silver Medal.

Poulter, Lionel, examined at L.C.C. Centre.

Second Prize, Silver Medal.

Boyle, James Wilson, examined at Glasgow.

GAS SUPPLY PRACTICE—GRADE I.

First Prize, Bronze Medal.

Hounam, Andrew Thomson, examined at Edinburgh.

GASFITTING—FINAL.

First Prize, Silver Medal.

Mills, Harold Ralph, examined at Exeter.

Second Prize, Silver Medal.

Ramplin, Maitland Edwin, examined at L.C.C. Centre.

GASFITTING—GRADE II.

First Prize, Bronze Medal.

Wilson, Norval John, examined at Walsall.

Chrisman Down-Run Process.

Under the direction of Mr. C. S. Chrisman, of the U.G.I Contracting Company, Philadelphia, there has been developed what is known as the Chrisman down-run process, for application to water gas sets. Reference has already been made to this process in the pages of the "JOURNAL;" and now results that have been obtained can be quoted. Mr. C. A. Schlegel, comparing the Chrisman down-run process with previous methods of operation, states that there have resulted from it a saving of generator fuel, the same or slightly better oil efficiencies, and an increase in capacity up to about 10 p.ct. The process provides for the down-run gas to by-pass the carburettor and superheater; this gas going directly from the bottom of the generator to the wash-box. As these gases leave the generator at a relatively low temperature, there is saved the heat ordinarily used to heat the down-run gas to the temperature of the carburettor and superheater. The length of the blasting time is therefore reduced, with resultant saving in fuel. The steam is admitted at the top and bottom of the generator, so that there is no cooling of the checker-brick, and the temperatures of the fixing chambers are maintained at those levels best suited to the grade of oil used. This permits of the proper fixing of the gas oil.

DISTILLATION IN PRACTICE.*

Reviewed by HARALD NIELSEN.

In his preface to this book, the author states "that the scope of the subject is so great, and the aspects so numerous, that it is impossible in such limited space to do more than touch on some of the most obvious points." I entirely agree with him. "Distillation in Practice" would probably have served its purpose better, in my humble opinion, if the first 70 pages, containing very curtailed theoretical calculations, had been still more curtailed, and two or three practical examples been carried through instead.

From start to finish, I take it that the book was written with the primary object of providing just enough for a practical distiller. As it is, "half a story is sometimes worse than no story," and might cause some confusion. Take, for instance, Hansbrand's "Rektifizier und Distillier-Apparate." Here is a little book of only 114 pages, but arranged and tabulated in a way which gives a clear, concise, and methodical treatment of the whole subject-matter.

Again, the section in "Distillation in Practice" regarding heat transfer leaves a good deal to be desired. Mr. Elliott mentions the work of a great number of people, and considers them all more or less wrong; but he gives no indication of what he regards as right. There is also here a want of practical data which would enable anyone to calculate to ± 10 p.ct. In a great many cases this can be done; and Mr. Elliott might have done worse than by reprinting some more of Hansbrand's tables. I have used these very frequently, and found them to give results which are fully up to everyday working requirements.

Mr. Elliott should have made up his mind to stick solely to B.Th.U., sq. ft., and ° Fahr., or the more scientific, and immeasurably easier, kg. cal., sq. metres, and ° C., instead of indulging in both on alternate pages. The metric system is preferable; and if the B.Th.U. man cannot clearly see where he is when he gets the answer in kg. cal., why, he can simply multiply kg. cal. by 3·96, and he is all right.

The author's short descriptions of various still systems and refining methods towards the end of the book are useful; and some of them are priceless for brevity. I give Mr. Elliott full marks for his new expression "Equilibrium distillation." This is distinctly good.

* "Distillation in Practice," by C. Elliott, B.Sc., A.M.I.C.E. The Chemical Engineering Library (Second Series). London: Ernest Benn, Ltd.; 1922. Price, 6s. net.

FORTHCOMING ENGAGEMENTS.

Sept. 3-4.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual general meeting at Dunfermline.

Sept. 8.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board.

Sept. 9, 10, 11.—IRON AND STEEL INSTITUTE.—Autumn meeting in the University, Edmund Street, Birmingham.

Sept. 14-16.—INSTITUTION OF PUBLIC LIGHTING ENGINEERS.—Second annual meeting and conference at Leeds.

Sept. 15-17.—IRISH ASSOCIATION OF GAS MANAGERS.—Annual meeting in Belfast.

Oct. 19-21.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual conference and general meeting in Plymouth.

INSTITUTION OF GAS ENGINEERS.

Sept. 7.—2.30 p.m., Emergency Committee. 3.30 p.m., Finance Committee.

Sept. 8.—4.0 p.m., Advisory Committee on Education.

Oct. 13.—4.0 p.m., Consultative Committee of the Education Scheme, followed by meeting of the Advisory Committee.

Oct. 22 (provisional).—2.30 p.m., Emergency Committee. 3.15 p.m., Finance Committee. 3.45 p.m., Council Meeting.

Nov. 10.—4 p.m., Advisory Committee on Education.

Nov. 11.—11.30 a.m., Emergency Committee. 12.15 p.m., Benevolent Fund Committee of Management. 12.45 p.m., Finance Committee.

Nov. 25.—11 a.m., Institution's session at the Public Works, Roads, and Transport Congress.

Dec. 2.—Official visit to the Shipping Engineering and Machinery Exhibition at Olympia.

Dec. 8.—4 p.m., Advisory Committee on Education.

Dec. 9.—11.30 a.m., Emergency Committee. 12.30 p.m., Finance Committee.

Metallon.—In our issue of June 24 reference was made to "Metallon—A New Anti-Corrosive Process." Messrs. Stewart, Browne, & Co., of Sentinel House, Southampton Row, W.C., inform us that they have made arrangements for Mr. G. M. Gill, of No. 119, Victoria Street, S.W. 1, to carry out a number of tests on the material under practical conditions in a London gas-works.

REFLECTIONS ON THE COAL TRADE CRISIS.

[FROM A MINING CORRESPONDENT.]

Two sets of men, unfortunately generally described as representing opposing interests in the mining industry, seated throughout a long day in different rooms of the same building, separated only by a corridor, across which the Prime Minister made innumerable journeys from one party to the other and back. Such is the picture which stands out most vividly, in the mind of the writer, of one of the most critical periods of the coal trade crisis. Such was, roughly speaking, the situation during the whole of last Wednesday; and with such vast interests at stake—national, as well as affecting more directly the two parties—they remained so near and yet so far. No good could have come out of any meeting, it was said. But what harm could have come? the average man is inclined to ask. The truth probably is that one side was so suspicious of the other, or that such feeling was mutual, that they were mortally afraid of being verbally trapped by the other. But what a pitiable state of affairs in Britain's premier industry, when such conditions could prevail within a few hours of a crisis which has been foreseen for almost a year.

It seems that the whole serious business must perforce be made a game of tactics. Move number one, the miners insist that proposals for working the industry shall come from the owners. Result, drastic suggestions for a desperate situation, quite unacceptable to the men, who have no counter-proposals to make—who, however, can then call the threatened stop a lock-out instead of a strike. No ballot required, and so on. Truly the extremist trouble-if-possible brigade have had everything in their favour this time, because the industry has been in such a sorry plight that there seemed to be no solution which could give a decent wage, unless it was the problematical solution of increased hours. This the miners would not even discuss.

The word problematical is used not only out of deference to the findings of the Court of Inquiry, but also because, without the will on the part of the workers, there seems no reason why an eight-hour day should improve matters. And the will to do anything to help anyone, even themselves, seems strangely lacking to-day in the miners. There must be considerable sympathy with them, because no one has any doubt that the wages of many of them are already low enough. But at the same time their leaders have done absolutely nothing in the least helpful except to refer to profits made in past years. With regard to these, the industry has so long lived a troublous existence, and nationalization has so obviously been so hard worked for by the men that a great many concerns have adopted the policy in good years of taking what offers, and dividing out generously.

The owners never received much sympathy from the public, probably very largely because of the price the domestic consumer has to pay for his coal! On this occasion, their position was hopeless, because they were forced to take the initiative in making proposals, and, needless to say, in the known circumstances of the industry, these made a very poor show from the cost-of-living standpoint. Disgusted as one felt with the whole affair of the crisis, and however futile the whole business seemed last week—the flesh-creeping utterances of Mr. Cook, the unwavering "demands" of the Federation, and the stolid silence of the owners—it is difficult to see what the Association could have done, much as one would have liked to include them in the general condemnation. They could not offer what was not there; and to go on working at the recent rate of loss, which is what unconditional withdrawal of the notices would have implied, was surely too much to ask. Incidentally, banks will not go on lending indefinitely even to colliery owners.

The Court of Inquiry did not have a chance. It was a desperate hope, and it had to produce a report on the evidence of one side, and at the same time try to avoid rousing angry passions in anyone. Its findings were colourless, but they at any rate emphasized the fact that the troubles of the industry were due to conditions over which the owners and the workers have no control. With the finding that there should be a minimum wage payable, in order to secure some feeling of security for the worker, there will be general agreement. The owners accepted this principle later in the negotiations, but the trouble was to find the means of paying a high enough one *nationally* to satisfy the Federation. As a matter of fact, the wage rate given by the last ascertainment in some districts, which means the rate economically payable without loss to the employers, but with no profit, fell a long way below that of the minimum rate fixed by the 1924 agreement.

Questions of transport costs, again, are largely a matter of the wages of another section of the community, and have long been a subject of agitation by the owners for a reduction. As regards the increased cost of shipment, which the Court considered also merits investigation, the financial results in recent years of shipping concerns do not offer much hope of the possibility of reductions in freights. It is difficult to understand what is meant by an improvement in distribution, and how this would result in the lowering of the price "to all classes of consumers." The householder certainly pays heavily for his coal in comparison with pithead prices, and colliery people are always at a loss to understand exactly where the whole of the big difference arises. But very little appears to have been brought to light in the inquiry which the late Labour Government instituted into the subject. Apart from household supplies, surely distribution costs between source and consumer are almost entirely a question of railway carriage or sea freight.

Royalties, of course, are an old bone of contention, chiefly because certain wealthy men own some of them, and receive income from them as other men do from other investments. Approximately, they add sixpence a ton to the cost of coal throughout Great Britain, a large part of which comes back in income-tax and supertax. So many different schemes have been proposed for dealing with them (and with the men who own them without personally taking part in the hewing of coal!) that the subject is too large to discuss here. The nation will, no doubt, say that, if any improvement is possible in the present system, by all means let us have it, provided it does not include robbing the present royalty owners, who, incidentally, are not by any means all immensely rich and uselessly idle individuals. It is, perhaps, not generally known that the Church is largely interested in mining royalties.

Reference has already been made to the question of hours of work. There remains the opinion of the Court that there probably is room for improvement in the management, organization, and development of the industry. Herein is supported the great contention of the miners, that the system of private ownership has failed to get the best possible out of the industry. The nation will devoutly hope that this will prove to be the case, and that the great inquiry which is to be instituted will get to the bottom of the trouble once and for all, and set this vital industry on the right road. For there is no doubt that people within the industry and without have come to the conclusion that there is something radically wrong somewhere, and that there must be some reason for the almost annual upheaval in the mines.

A few words with regard to the temporary settlement which was reached at the end of last week, though, at the time of writing, only the vaguest details are available as to the manner in which the price of peace is to be employed. It is not proposed here to discuss the rights and wrongs of subsidies to industry. But, apart from all questions of principle, either in general, or as applied to this particular case, it is difficult to see what other solution there could possibly have been to the present deadlock, without either unreasonably depressing the workers' wages, or expecting the owners to go on indefinitely borrowing money to run the mines. If a stop had come, it is hard to see why it should ever have come to an end, with matters as they now are. Why, it may be asked, have things run on in this way until funds within are so exhausted that help has to be sought from without to tide the industry over the time required for an exhaustive inquiry? That is, surely, the grievance that the taxpayer may justly have when he is asked to add to his burdens.

Let us try to end with a note of optimism. The terms on which the subsidy is to be granted are not yet known. Indeed, they appear likely, at the time of writing, to become the subject of anxious negotiation. But may we not hope that this help to the coal industry may be a means of helping other industries, and of saving money in other directions by giving employment to some of the present great army of workless? This idea may seem somewhat remote, and, naturally, it depends upon the manner in which the help is to be given. But, frankly, the method of buying a respite at the last moment is fraught with so much danger, and will be so unpalatable to the vast majority of right-thinking men, that it is well to try to find a brighter side.

HEATING VERTICAL RETORTS WITH COAL GAS.

By FRANK ELCOCK, Superintendent of Gas-Works, Ottawa (Ont.) Gas Company.

[A Paper read at the Quebec City Convention of the Canadian Gas Association.]

When the Ottawa Gas Company abandoned their old plant on completion of the new one in 1915, it was found necessary to secure a market for the large increase in superfluous coke, as all gas made was from coal in continuous vertical retorts.

Large sums of money were spent in advertising, &c., delivery equipment, storage and coke-handling plant, demonstrating, and service. Publicity has been maintained since then; and a good market has been obtained for this fuel. The Fuel Board appointed by the Dominion Government have recommended coke as the most practical fuel to substitute for the rapidly diminishing supply of anthracite coal. The publicity given to the recommendations of this Board has also

stimulated the demand for coke, with the result that we realized early last winter that the stock of coke built-up during the summer months would be insufficient to cover the demand. We were then compelled to consider the purchase of coke or methods to increase production in order to satisfy our customers' requirements.

Our previous experience in importing coke was not very satisfactory. Car shipments were often delayed, sales fluctuated with weather conditions, coke at times contained a high percentage of breeze, and was sometimes of low fusibility, the density of it varied, and costs of unloading, re-screening, and stocking usually left little or no profit. Upon investigating the methods of increasing production, we realized that it might be profitable, if practicable, to burn coal gas for our vertical retorts, instead of producer gas made from coke. Any coal gas used would release coke fuel for sale and increase coke production, as additional coal would be carbonized to produce gas for fuel purposes. The necessary estimates were made and placed before our management; and it was decided to make the experiment.

Early in January a 3-in. gas line was run from the outlet of the ammonia scrubber to the retort house. This was then connected into a main 3-in. supply header in front of the settings. Then 1½ in. and 2 in. branches with regulating cocks were taken off this header and connected into each main producer-gas flue to the settings. The gas supply was taken from the inlet of the oxide purifiers, as the residuals, tar and ammonia, were reclaimed from the gas to offset costs of coal carbonized. The load and costs of purification were not increased; and a good pressure gas supply was available without having to use a compressor.

Gas was first admitted to one setting for experimental purposes. The main producer-gas dampers were closed, and primary air to the producers closed. Waste-heat chimney dampers were also reduced. The individual dampers controlling each combustion chamber (both gas and secondary air) were not moved, unless regulation was found to give very poor combustion. The regulation of these dampers was avoided as far as possible, as we realized that gas was only to be used for a short time.

The combustion was found to be fairly even, but with a tendency for the upper chambers to have an excess, and the lower chambers insufficient, gas. This was to be expected, since the volume of coal gas required was less than one-sixth the volume of producer gas, and the nostrils admitting gas had not been reduced to offset this reduced volume. After a few minor adjustments were made, and figures obtained as to gas consumption, we soon realized that it would be to our benefit to extend the experiment to other settings, with the hope of increasing coke production sufficiently to cover our requirements. Gas was then extended and used on other settings as soon as possible, and depending on the probable coke requirements, until four of the five settings working were on gas, and the capacity of the supply pipe was taxed.

It was found later that, by admitting a little producer gas with coal gas, combustion in individual chambers was more even, and that the normal producer gas adjustment was more satisfactory for combustion. This accounts for the coke consumption being given in comparing fuel or heat consumptions. It must be remembered that this work was not done to determine the possibilities of gas-fired vertical retorts or the probable operating costs of same. However, given the necessary favourable market for coke, there is no doubt in the writer's mind that it could easily be done, and the operating costs be considerably reduced, due to less labour, better temperature control, and lower capital cost.

The results given were taken from our quarter-monthly reports. Comparisons of heat required per ton of coal carbonized are shown; the coke consumption being taken as 13 p.c. of the coal carbonized under normal operation. This figure was the average for the year 1924. It will be noticed that the heat consumption is considerably lower, especially when comparing the period when most gas was being used for firing purposes. More constant and accurate combustion can undoubtedly be obtained by gas firing; and the loss of unconsumed coke in ashes and radiation losses from producers are eliminated.

The carbonizing temperatures obtained were not quite as high as could be desired during the period of using gas; but the results clearly show that there is a big reduction in necessary heat input as compared with coke fuel. Comparing the fuel consumption on vertical retorts with coke-oven operation, we find it more favourable. This I attribute to the vertical retorts being continuous, and to the sensible heat of the coke being recuperated. We were satisfied with the operating cost and practical application of gas as fuel, and are prepared to repeat it, should the occasion arise.

Fuel Consumption per Ton of Coal Carbonized.

	Thousand B.Th.U.
Average coke fuel only under normal operation:	
Coke, 13 p.ct., or 260 lbs., at 12,000 B.Th.U.	3120
For period of three months, partial gas firing:	
Coke, 9·03 p.ct., or 180·71 lbs., at 12,000 B.Th.U.	2168·52
Gas, 1361 c.ft., at 475 B.Th.U.	646·48
Total	2815·00
Reduced heat consumption, 305,000 B.Th.U., or 9·77 p.ct. below normal.	
For period of one month, partial gas firing:	
Coke, 6·62 p.ct., or 132·45 lbs., at 12,000 B.Th.U.	1589 00
Gas, 1967 c.ft., at 472 B.Th.U.	928 40
Total	2517·40
Reduced heat consumption, 602,600 B.Th.U., or 19·31 p.ct. below normal.	
For a period of nine days, maximum partial gas firing:	
Coke, 4·96 p.ct., or 99·2 lbs., at 12,000 B.Th.U.	1190·40
Gas, 2215 c.ft., at 478 B.Th.U.	1058·70
Total	2249·10
Reduced heat consumption, 870,900 B.Th.U., or 27·91 p.ct., below normal.	

By deducting the average coal carbonized and fuel consumed in the only one of five settings working on coke fuel:

Coke, 3·22 p.ct., or 64·42 lbs.	773
Gas, 2768 c.ft., at 478 B.Th.U.	1323
Total	2096
Reduced heat consumption, 1,024,000 B.Th.U., or 32·82 p.ct. below normal.	
Converting the coke fuel to gas, 773,000 ÷ 478	1617 c.ft.
Plus gas fuel	2768 ,,
Estimated gas consumption of 478 B.Th.U.	4385 c.ft.

COMPARATIVE TABLE.

Year.	Number of Authorized Undertakings Included in Return.	Materials Used in Manufacture of Gas.			Quantity of Gas.								Quantity of Residuals Made.			Number of Consumers.		Length of Mains.
					Made.				Sold.									
		Coal Carbonized.	Coke for Water Gas.	Oil.	Coal Gas.	Water Gas.	Total Made.	Therms.	To Prepayment Consumers.	To Ordinary and Power Consumers, &c.	For Public Lamps.	Total Sold.	Therms.	Coke and Breeze.	Tar.	Sulphate of Ammonia.	Prepayment.	Ordinary.	
		Tons.	Tons.	Gallons.	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	‡	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	‡	Tons.	Gallons.	Tons.			Miles.
1920. . .	798	17,566,316	+	+	214,703,118	36,932,530	*256,977,744		77,911,168	150,562,911	6,928,745	235,402,824		+	+	+	4,030,647	3,417,685	38,847
1921. . .	797	15,775,696	1,254,122	51,731,492	194,518,147	49,894,716	*249,019,732		80,285,658	141,768,033	7,023,422	229,077,112		10,404,702	160,376,472	115,979	4,071,220	3,488,090	39,547½
1922. . .	796	15,907,095	1,057,909	46,145,160	201,963,546	43,946,129	*252,070,321		78,224,063	146,174,788	8,203,938	232,602,789		10,475,155	169,770,531	113,373	4,137,009	3,535,137	40,231½
1923. . .	790	16,460,632	906,717	42,751,644	217,756,730	38,347,643	*259,849,536		82,404,187	150,256,712	8,965,704	241,626,603		11,098,169	181,962,574	117,166	4,231,243	3,579,107	40,984½
1924. . .	784	17,329,180	976,366	45,460,609	231,886,036	39,268,220	*275,225,839		88,539,752	158,748,918	9,603,252	256,891,922		11,657,465	195,257,278	124,737	4,340,583	3,653,203	41,985

* Including "Other gas," in 1920, 5,342,096,000 c.ft.; 1921, 4,606,869,000 c.ft.; 1922, 6,160,646,000 c.ft.; 1923, 3,745,163,000 c.ft.; and 1924, 4,071,583,000 c.ft. § The number of therms made and sold by all undertakings cannot be given. : Information not available.

GAS UNDERTAKINGS RETURN FOR 1924.

Issue of Part I. by the Board of Trade.

Part I.—the section which furnishes particulars with regard to the manufacture and supply of gas—of the Board of Trade Return relating to all Authorized Gas Undertakings in Great Britain for the year 1924, has been issued by H.M. Stationery Office (Adastral House, Kingsway, London, W.C. 2, and Branches), at the price of 5s. net. It deals with 784 undertakings, which compares with a total of 790 included in the return for 1923. In the meantime six undertakings have been absorbed by others—Dronfield, by Sheffield; Harrow and Richmond, by Brentford; Kempston, by Bedford; Maidenhead, by Uxbridge; and Twyford, by Yorktown. In addition, the Hatfield (Yorks.) and Montgomery undertakings are now regarded as unauthorized; and the five works of the Stoke-on-Trent Corporation have been amalgamated to form one undertaking. This loss of twelve is reduced to six by the addition of half-a-dozen new undertakings—namely, Penryn, Wirksworth, Oldmeldrum, and three works owned by the Lanarkshire County Council (Cleland, Newarthill, and Stonehouse).

The particulars are for the calendar year 1924 in the case of England and Wales, and for the twelve months ended May 15, 1924, in the case of Scotland. As on the last occasion, individual quantities of gas made and sold are shown both in cubic feet and therms, if the undertaking was authorized during any part of the year to charge for heat units supplied; but it will be noted from the table from the return (reproduced opposite) that the number of therms made and sold by all undertakings cannot be given.

The quantity of coal carbonized in 1924 by the authorized gas undertakings of Great Britain was 17,329,180 tons, of coke employed for the manufacture of water gas 976,366 tons, and of oil used 45,460,609 gallons. The amount of coal gas made was 231,886,036,000 c.ft., and of water gas 39,268,220,000 c.ft. The total quantity made (including 4,071,583,000 c.ft. of "other gas") was 275,225,839,000 c.ft. Gas sold totalled 256,891,922,000 c.ft., divided up as follows: Prepayment consumers, 88,539,752,000 c.ft.; ordinary and power consumers, &c., 158,748,918,000 c.ft.; and for public lamps, 9,603,252,000 c.ft. The residuals made were: Coke and breeze, 11,657,465 tons; tar, 195,257,278 gallons; and sulphate of ammonia, 124,737 tons. The prepayment consumers numbered 4,340,583, and the ordinary consumers 3,653,203. The total length of mains was 41,985 miles.

INCREASE IN GAS SALES.

The quantity of gas made during 1924 was 15,376,303,000 c.ft. (5·9 p.ct.) in excess of the quantity made in 1923; this increase being almost double the increase in the latter year over 1922. The increase in coal gas made was 14,129,306,000 c.ft.; in water gas made, 920,577,000 c.ft.; and in "other gas" made, 326,420,000 c.ft. There were 868,548 tons more coal carbonized than in 1923, and 69,649 tons more coke and 2,708,965 gallons more oil used in the manufacture of water gas. The coke and breeze made in 1924 exceeded that made in 1923 by 559,296 tons, and 13,294,704 gallons more tar were made. The quantity of gas sold increased by 15,265,319,000 c.ft., or 6·3 p.ct. The number of consumers increased by 183,436, a majority of these being prepayment consumers.

THE COMPARATIVE TABLE.

The comparative table which appears with this notice, and to which reference has already been made, gives the totals for the whole of the authorized undertakings included in the return for the years 1920 to 1924. The separate figures for England and Wales and Scotland for the last three years are as follows:

1924.

England and Wales.—Coal carbonized, 15,770,012 tons; coke for water gas, 947,189 tons; oil used, 45,242,865 gallons. Coal gas made, 211,084,643,000 c.ft.; water gas, 37,918,918,000 c.ft.; total gas made, 253,075,066,000 c.ft. Sold to prepayment consumers, 82,879,003,000 c.ft.; to ordinary and power consumers, &c., 145,430,758,000 c.ft.; for public lamps, 8,522,271,000 c.ft.; total quantity sold, 236,832,032,000 c.ft. Coke and breeze made, 10,699,716 tons; tar, 172,805,085 gallons; sulphate of ammonia, 108,436½ tons. Number of prepayment consumers, 4,036,251; ordinary consumers, 3,161,325; total number of consumers, 7,197,576. Length of gas mains, 38,548½ miles.

Scotland.—Coal carbonized, 1,559,168 tons; coke for water gas, 29,177 tons; oil used, 217,744 gallons. Coal gas made, 20,801,393,000 c.ft.; water gas 1,349,302,000 c.ft.; total gas made, 22,150,773,000 c.ft. Sold to prepayment consumers, 5,660,749,000 c.ft.; to ordinary and power consumers, &c., 13,318,160,000 c.ft.; for public lamps, 1,080,981,000 c.ft.; total quantity sold, 20,059,890,000 c.ft. Coke and breeze made, 957,749 tons; tar, 22,452,193 gallons; sulphate of ammonia, 16,300½ tons. Number of prepayment consumers, 304,332; ordinary consumers, 491,878; total number of consumers, 796,210. Length of gas mains, 3436½ miles.

1923.

England and Wales.—Coal carbonized, 14,939,033 tons; coke for water gas, 876,103 tons; oil used, 42,507,755 gallons. Coal gas made, 197,918,057,000 c.ft.; water gas, 36,955,050,000 c.ft.; total gas made, 238,624,961,000 c.ft. Sold to prepayment consumers, 76,985,854,000 c.ft.; to ordinary and power consumers, &c., 137,553,792,000 c.ft.; for public lamps, 8,048,186,000 c.ft.; total quantity sold, 222,587,832,000 c.ft. Coke and breeze made, 10,148,985 tons; tar, 162,160,390 gallons; sulphate of ammonia, 102,268 tons. Number of prepayment consumers, 3,936,729; ordinary consumers, 3,088,459; total number of consumers, 7,025,188. Length of gas mains, 37,607¾ miles.

Scotland.—Coal carbonized, 1,521,599 tons; coke for water gas, 30,614 tons; oil used, 243,889 gallons. Coal gas made, 19,806,088,000 c.ft.; water gas, 1,392,593,000 c.ft.; total gas made, 21,224,575,000 c.ft. Sold to prepayment consumers, 5,418,333,000 c.ft.; to ordinary and power consumers, &c., 12,702,920,000 c.ft.; for public lamps, 917,518,000 c.ft.; total quantity sold, 19,038,771,000 c.ft. Coke and breeze made, 949,184 tons; tar, 19,802,184 gallons; sulphate of ammonia, 14,898 tons. Number of prepayment consumers, 294,514; ordinary consumers, 490,648; total number of consumers, 785,162. Length of gas mains, 3376½ miles.

1922.

England and Wales.—Coal carbonized, 14,352,910 tons; coke for water gas, 1,013,680 tons; oil used, 45,991,553 gallons. Coal gas made, 183,204,823,000 c.ft.; water gas, 42,165,211,000 c.ft.; total gas made, 231,511,682,000 c.ft. Sold to prepayment consumers, 73,066,084,000 c.ft.; to ordinary and power consumers, &c., 133,513,585,000 c.ft.; for public lamps, 7,406,723,000 c.ft.; total quantity sold, 213,986,392,000 c.ft. Coke and breeze made, 9,575,219 tons; tar, 151,092,034 gallons; sulphate of ammonia, 98,897 tons. Number of prepayment consumers, 3,855,021; ordinary consumers, 3,047,444; total number of consumers, 6,902,465. Length of gas mains, 36,917½ miles.

Scotland.—Coal carbonized, 1,554,185 tons; coke for water gas, 44,229 tons; oil used, 153,607 gallons. Coal gas made, 18,747,174,000 c.ft.; water gas, 1,780,918,000 c.ft.; total gas made, 20,558,639,000 c.ft. Sold to prepayment consumers, 5,157,979,000 c.ft.; to ordinary and power consumers, &c., 12,661,203,000 c.ft.; for public lamps, 797,215,000 c.ft.; total quantity sold, 18,616,397,000 c.ft. Coke and breeze made, 899,936, tons; tar, 18,678,497 gallons; sulphate of ammonia, 14,476 tons. Number of prepayment consumers, 281,988; ordinary consumers, 487,693; total consumers, 769,681. Length of gas mains, 3314 miles.

COMPANIES AND LOCAL AUTHORITIES.

In the return for 1924, the undertakings in the hands of companies and of local authorities are divided thus:

England and Wales.—466 companies; 245 local authorities.

Scotland.—4 companies; 69 local authorities.

Further details from the return will be given in the next issue of the "JOURNAL."

PRESENT STATE OF THE GAS INDUSTRY IN FRANCE.

(*Continued from p.* 276.)

GAS-WORKS PLANT.

The theory of rapid condensation of gas followed by intensive washing in water has enlisted the support of the great majority of French gas engineers. However, the crude and ill-considered application of the theory has in many instances brought about stoppages in mains and service pipes, and corrosion of consumers' meters and appliances. Such disastrous occurrences can be readily explained; but here we will content ourselves by remarking epigrammatically that excess in all things should be avoided.

As far as ammonia recovery is concerned, there is nothing much to remark upon, except that even the smallest works have adopted the working-up of their ammoniacal liquor in order to avoid being a nuisance to their neighbours.

For some time past, a good deal has been heard of the process of liquid purification with carbonate of soda, the novelty of which is questionable, but which has been developed by the Koppers Company of America. In practice, regeneration of the solution by violent agitation with air releases sulphuretted hydrogen into the atmosphere, and does not allow of recovery of the sulphur. To purify the gas to the extent of 0·5 gr. of sulphur per cub.m., it has been proposed to add ordinary oxide boxes to the wet purifier. It is noteworthy that the purified gas contains only traces of sulphur in the form of H_2S, but some decigrammes per cub.m. as CS_2. In deciding upon the least costly processes of making and treating town gas, one would hesitate to adopt the sodium carbonate washer and revivifier for the foregoing reasons, and in spite of the argument that the high reaction speed permits a less cumbrous purifying plant.

Damage wrought by hydrocyanic acid in the presence of oxygen upon gasholders, mains, and meters, since the disappearance of the separate tar and naphthalene plant (owing to

* Including "Other gas," in 1920, 5,342,096,000 c.ft.; 1921, 4,606,869,000 c.ft.; 1922, 6,160,646,000 c.ft.; 1923, 3,743,163,000 c.ft.; and 1924, 4,071,583,000 c.ft. § The number of therms made and sold by all undertakings cannot be given. : Information not available.

the perfecting of purifying processes) and the growth of water-gas making, has convinced such engineers as are also good chemists of the necessity of eliminating cyanogen, even if its recovery is not directly remunerative. Its ravages are such in certain districts that the cost of upkeep and inspection of meters is greater than the costs of total replacement. This situation is by no means particular to France, for reports of serious trouble—such as was at one time unknown to engineers—come to us from elsewhere—in one case from a works in South America, where dry meters only are employed. The Société du Gaz de Paris, after experiments on a semi-working scale, are putting up at the Landy Station a plant for the removal of HCN from 100,000 cub.m. of gas per twenty-four hours; an interesting process, which the Company have patented, being installed. It is a two-stage process employing the Laming purifying mixture. In the first liquid stage, ferrous sulphate and lime arrest the cyanogen; while in the second stage, sulphuretted hydrogen is removed and fresh Laming mixture is prepared from the purifying medium.

Types of Town Gas.

In France at the moment blue water gas (2700 cal. per cub.m.) and "integral" gas (3200 cal. per cub.m.) from complete gasification cannot be considered as normally available for town supply. Theoretically and practically, water-gas making has become, through automatic control, an elementary process of remarkable certainty. The provision of the necessary steam remains one of the obstacles to its extension; and with a view to removing this difficulty, there has been suggested the flash vaporization of water in checker brickwork preferably heated by the blow gas, or the "automatic" production of steam in a boiler jacketting the producer. In this regard, however, it seems abundantly clear that to borrow heat from the reaction zone is wrong in principle; in fact, one cannot "recover" heat units except from the blow gases or from the sensible heat of the water gas itself. If the incandescent coke in the producer, the duty of which is to decompose the steam, is affected by a cold jacket, "low-temperature" water gas (CO_2+H_2) is likely to be produced instead of $CO+H_2$; and the whole operation breaks down. Without stressing the greater difficulties of keeping the plant running and of mixing the water gas with the coal gas, it would appear that the processes of water-gas making suggested for small works have not all solved the primary problem of reliability.

More fascinating seems to be the production of "integral" gas by distillation and gasification of the coal in a single apparatus. The process, however, is rather more delicate, and in any case necessitates the employment of non-caking coals (rather of the steam type) or fuel mixtures. However, Tully plants are at work at Thizy, Louhans, Saint-Germain-en-Laye, Livry, Sidi-bel-Abbés, Biarritz, Etaples, Charleville, and Lille. Upon the manner in which this plant is run and the quality of the coal used depend entirely the results which are obtained. In Austria, Italy, Germany, Czecho-Slovakia, Denmark, Yugoslavia, &c., there are already numerous mixed-gas producers on the Strache principle, and there is also one at work in France, at Nîmes. From different types of the Strache producer can be obtained a mixed gas with a gross calorific power of 3·3 thermies per cub.m. (one thermie = 1000 cal.) without any coke, or a richer gas of 3·6 thermies without coke production but with cracking of the tar. A third most interesting type of the Strache plant gives 4 thermies per cub.m., which is obtained by a partial withdrawal of coke from the gasification zone.

[M. Grebel read a paper on the Strache producer before the Société Technique this year; and an abstract, with illustrations, was given on p. 48 of this volume of the "Journal."]

As for low-temperature carbonization, which gives a small quantity of very rich gas, M. Grebel does not share the popular view. "We have already stated too often, to repeat it again, what we think of the subject from the gas and coke maker's point of view. The protagonists of home-produced liquid fuel look at it through the wrong end of the telescope, and miss the real economic aspect."

(To be concluded.)

DARLINGTON WINDOW-DRESSING PRIZE.

The accompanying photograph, forwarded by Mr. A. E. Ruffhead, Gas Engineer and Manager to the County Borough of Darlington, illustrates the special effort of his Department during the recent Railway Centenary Celebrations, when the town was decorated, and prizes were offered for decorated premises and window dressing. In the novelty class of the latter, their scheme obtained a prize.

The framed cards, depicting two contrasting cooking arrangements, contain the following:

In eighteen hundred and twenty-five,
Great-great-grandmother was alive,
With twenty children to cook for, too,
In this round oven. How did she do?

Mother's kitchen is different quite,
Everything is clean and white,
Gas does the cooking—the washing, too!
She's proved It's best. Why shouldn't you?

The old fireplace is shown in the window on which the word "Young" appears.

NEW SHOWROOMS AT HANLEY.

Stoke-on-Trent Gas Department's Enterprise.

The progressive policy of the City of Stoke-on-Trent Gas Department (of which Mr. A. Mackay is Chief Engineer) was exemplified by the opening on July 16 of handsome new showrooms in Hanley. The ceremony was performed by Alderman T. Mitchell (Vice-Chairman of the Gas Committee), in the unavoidable absence owing to a business engagement of the Chairman (Mr. C. H. Bowers). The company included the Mayor of Stoke-on-Trent (Alderman H. Leese), the Mayor and Mayoress of Newcastle, Staffs. (Mr. and Mrs. Arthur Hassam), and a large number of aldermen, councillors, and officials.

In declaring the new showrooms open, Alderman Mitchell pointed out that similar new premises had been recently opened at Longton; while there were also showrooms at Burslem and Tunstall. The old showrooms at Hanley had been set apart for other municipal purposes. The Gas Committee were most anxious that the public should take every advantage of the services the Department were so willing to render them. Since the very successful gas exhibition in the spring of last year, the business of the Department had increased enormously. The Department had a lady demonstrator, whose services would be lent to anyone having trouble in the manipulation of a gas cooker; and there was also an advantageous burner maintenance scheme. The Department had one thing to offer, and that was service.

After tea had been served, the Mayor of Newcastle proposed "The City of Stoke-on-Trent and the Success of the Gas Department." He congratulated the Department upon the showrooms, and said he was glad to see the enterprise of the Committee and Mr. Mackay. He was aware of the energy and foresight shown by Mr. Mackay in developing the chemical side of the gas undertaking at Etruria; and he believed this to be a sound policy.

The toast was responded to by the Mayor of Stoke-on-Trent, who predicted that in the near future gas would be supplied a great deal more cheaply.

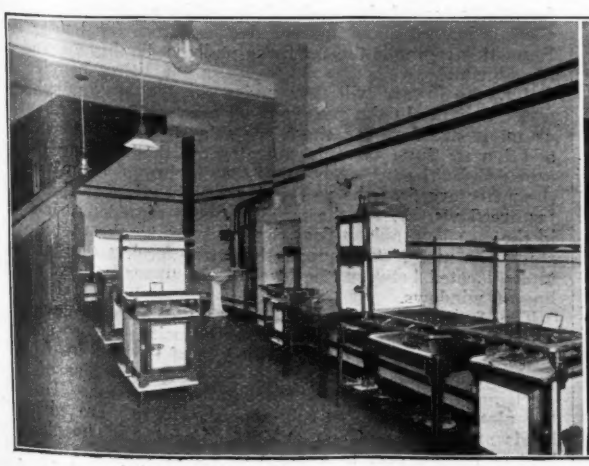
Replying to a vote of thanks, Alderman Mitchell paid a tribute to the great ability shown by Mr. Mackay in connection with the centralization scheme. He, also, was certain that in a short time the Corporation would be able to supply gas at a much cheaper rate. He greatly appreciated the work of the Gas Engineer and his staff on the new showrooms; and the contractors (Messrs. W. Thomas & Son) had done their part splendidly.

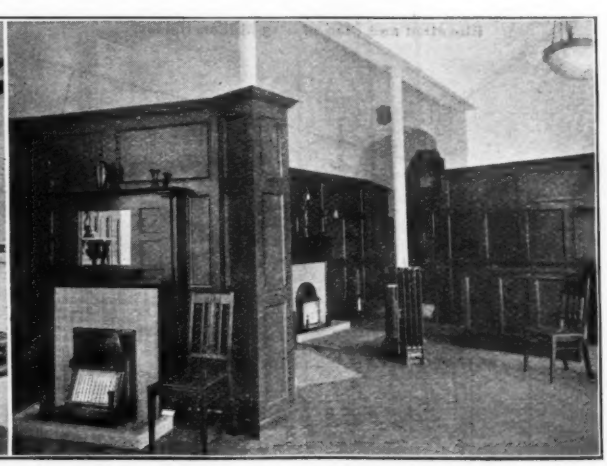
THE SHOWROOMS.

The showrooms are situated on the corner of Upper Market Square and Tontine Square, and have a commanding position in the heart of the shopping area. The building has a large expanse of windows on both these important squares, and particularly lends itself to the display of gas appliances. The windows facing Tontine Square have been designed so as to present a complete view of the whole of the showrooms from the street; and it will thus be possible for the public to see, as they pass by, the cheery glow of a gas fire actually in operation giving economical and healthy warmth without work or dirt. This is difficult to accomplish in an ordinary window, owing to the absence of a chimney and the effect of the heat on the plate glass. The open-window arrangement also makes it possible for the public to see demonstrations of cooking, ironing, &c., being carried out in the showroom.

The showrooms are divided into two imposing saloons, one exhibiting domestic appliances, and the other gas fires and fancy fittings. The second is the first to be seen on entering through the chief vestibule. The main saloon is panelled-out in dark oak-coloured timber, to a height of 8 ft., with a deep white frieze above. The ceiling has been very artistically panelled and finished white. Worked-in with the panelling is a range of ornamental fireplaces, fitted with modern gas fires. One side of the room is occupied by a large showcase displaying fancy lighting fittings. A glass counter-case effectively shows silk and bead shades.

The walls of the second room have been treated with ivory white tiles to a height of 8 ft., with a dark brown border, and finished with a deep white frieze. Here are displayed cooking ranges, wash boilers, water heaters, &c. Several geysers and circulators are fitted-up for demonstration. The geysers and





connecting pipes are finished in oxidized copper, which illustrates the modern tendency towards the elimination of all polished metal work.

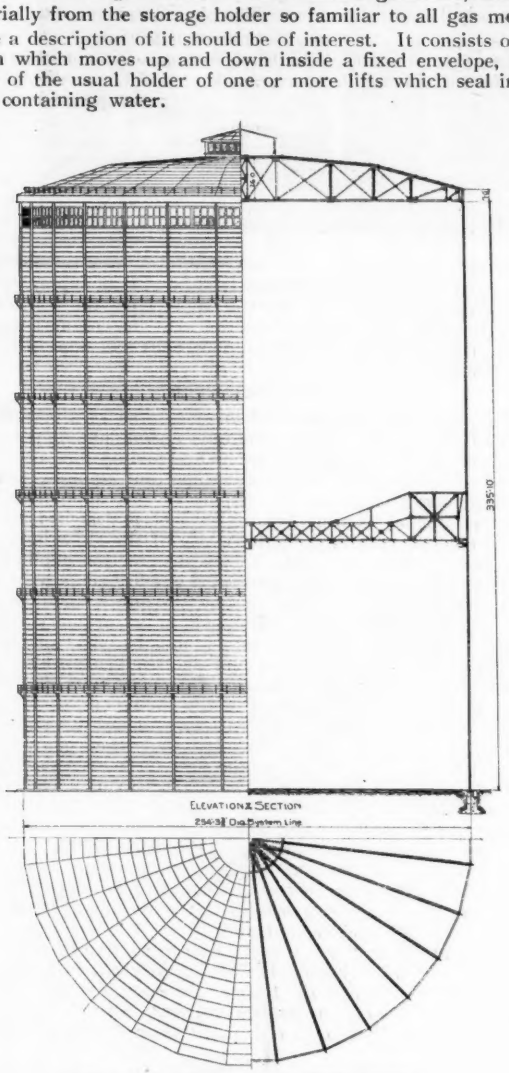
The lighting of the showrooms is pleasing, effective, and distinctive. Six powerful outside lamps will illuminate the whole of the frontage, while the windows inside are fitted with a new type of chain suspension semi-direct lighting. A point about the outside lamps which is not yet generally known is that they may be lighted and extinguished by one switch from inside the premises, and, if necessary, could be controlled automatically to light and extinguish themselves at a set time. The whole of the inside lights are also controlled by switches. These lights illustrate designs for domestic, shop, and factory lighting.

WATERLESS GASHOLDERS.

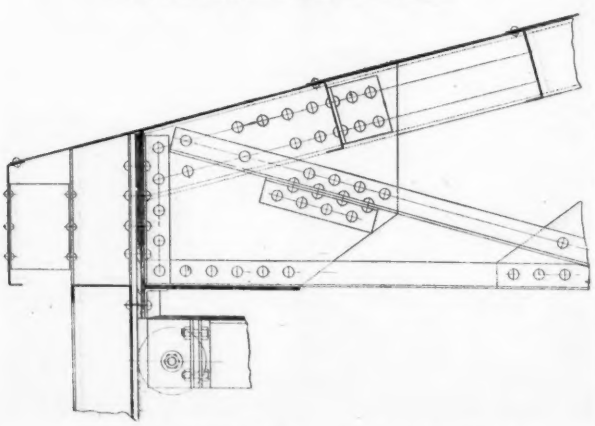
By FRED H. WAGNER, Chief Engineer of the Bartlett Hayward Company.

[From a paper read at the Quebec City Convention of the Canadian Gas Association.]

The waterless gasholder, or the tankless gasholder, differs materially from the storage holder so familiar to all gas men; hence a description of it should be of interest. It consists of a piston which moves up and down inside a fixed envelope, instead of the usual holder of one or more lifts which seal in a tank containing water.



Elevation and Plan of a 15 Million Holder.

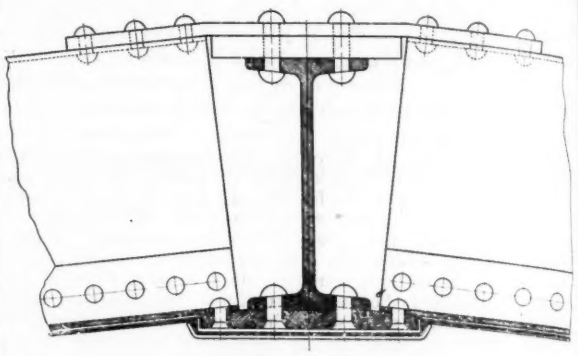


Connection between Roof Truss and Shell Column.

The envelope or structure in which the piston moves consists of a polygon of from 10 to 28 sides, depending on the required capacity of the holder, with a height varying from one-and-a-fifth to one-and-two-thirds times the diameter of a circle circumscribed around the polygon. This polygonal structure is roofed over; and there are generally provided windows in the sides immediately under the eaves of the roof, in order to permit illumination of the piston and the side walls of the structure above the piston.

The piston consists of a flat surface trussed to give it the necessary rigidity for it to be guided by rollers and thus maintained in a horizontal position. The method used for guiding the truss is similar to that employed in water-tank holders, except that no tangential rollers are fitted. In place of the usual tangential rollers at each column, two or more pairs of brass rubbing-strips are used for the entire piston. The vertical distance between the top and bottom rollers is about one-tenth of the diameter of the holder.

The gas-tight joint between the piston and the holder walls is made by a tar seal, which is the vital part of the structure. The tar seal proper consists of a rubbing-plate turned-up



Section through a Column.

slightly on the edge, to cause it to glide smoothly as the piston moves. This plate is kept in contact with the side of the holder by means of weighted levers; and the plate is thin enough to accommodate itself to any slight irregularities in the surface against which it moves. The joint between the plate and the piston is made by means of canvas attached to the back of the plate, and carried over to the side of the piston as shown. The canvas is carried over a wooden rod, to prevent its touching the side of the holder; and at the bottom it lies on a wooden strip. The canvas is not subjected to friction or to any strain other than that caused by the weight of the tar; and it should therefore have a life as long as that of the holder foundation.

The drawing of the seal shows the form of the sheet for the shell plating. The bottom of each sheet has one bend, and the top two; these bends being designed to provide the necessary stiffness for the structure, and to facilitate the riveting. Such tar as may leak past the rubbing-strip will run down the sides of the holder and into a reservoir at the bottom; this reservoir being made by providing a dam sheet circumferentially around the inside of the holder at the bottom. This sheet is located about four or five feet from the holder sides. From this reservoir the tar flows under a diaphragm and over an adjustable weir to a tank. The tar being heavier than water, the former will flow under the diaphragm, while the water remains in the reservoir. There are usually about half as many overflows as there are sides to the holder; and in addition to these there is a water overflow similar to those provided for the tar, except that the diaphragm is omitted. In the water overflow the weir is kept slightly higher than in the tar overflows. When the tar rises above a predetermined level in the overflow tank, a float rises and throws the switch which starts the motor and pump; the latter forcing the tar up to tanks located between the level of the upper gallery and the line of windows.

The first holder completed in this country is located at Michigan City (Indiana). It has a capacity of 1,000,000 c.ft., is 105 ft. in diameter, and has a height of 136 ft. 8 in. from the top of the foundation to the eaves. The sheets are of No. 4 steel, and the columns are made-up of eye-beams. To stiffen the plates between the columns, the former are given the bends at the top and bottom shown in fig. 2. The plates are bent or flanged over to a depth of 7 in.; while the top has a second bend on the outer edge, this bend being 2½ in. deep.

The columns are bolted to the foundation at the bottom; and, with the flanged side plates, form a very stiff girder to withstand the wind pressure. There are three galleries which run entirely around the holder. These galleries are not designed to strengthen the holder, but are for the purpose of inspection and painting.

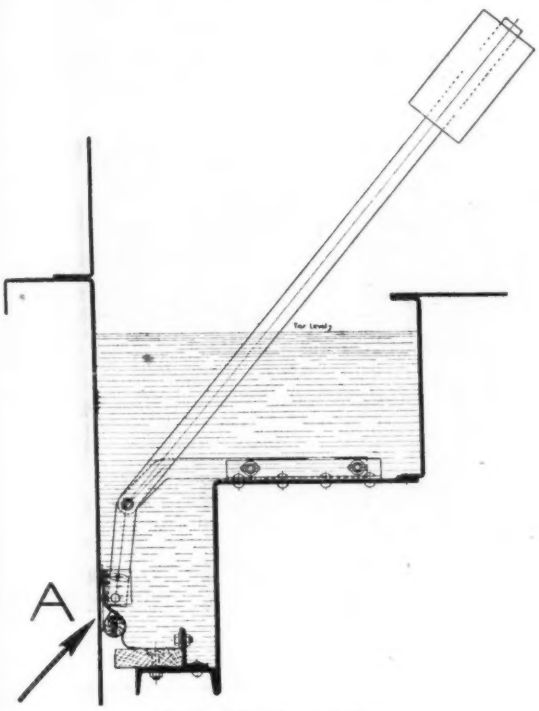
As previously stated, when a certain amount of tar drains from the reservoir at the bottom into a tar tank, a float is raised, which automatically starts the motor operating the tar pump. Tar is then pumped into the two tanks served by that particular pump; the tanks extending over the length of the two sides adjacent to the pump, and between the upper gallery and the windows. Under ordinary operating conditions, the tar flows immediately from the tar tank, which is kept full, to the piston seal. If, for any reason, additional tar is required, a valve under the bottom of these storage tanks at the top of the holder may be opened, and the tar is thus permitted to drain through the tar distributors to the piston seal.

The pump used for raising the tar was specially designed for handling heavy and viscous liquids; and after ten years of operation it has been found particularly well adapted for service in connection with this type of holder.

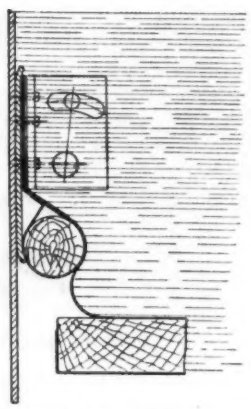
At intervals around the perimeter of the holder, and slightly below the top, are slots connected with pipes which extend upwards into the atmosphere. As the piston rises, a small amount of tar from the seal will run into these slots, after which, as the piston continues to rise, the rubbing-bar will pass over. After the rubbing-bar has passed the slots, such tar as may have run into them will flow back under the rubbing-bar into the holder, and gas will blow through the attached vent pipe. This will prevent the piston being raised sufficiently high to damage the roof structure. A collapsible ladder is provided in the centre of the holder for giving access to the piston from the ventilator in the centre of the roof. As the piston rises, this ladder folds up; and it unfolds as the piston descends.

The method adopted for erecting this holder is somewhat unusual, in that the roof is built on supports resting on the piston while the latter is on the ground; the roof thus rising with the piston as the holder shell is built-up until the final sheet is reached, at which time the roof is in its proper position for final connection to the structure. The devices used for raising the structural material are placed on the roof in a manner generally similar to the method of construction practised with the older type of holder. As each line of shell sheets is put in place, the piston is raised, by means of air blown in on the underside, to a new position; and it is then hung by hooks to plates which are temporarily attached to the columns. In this new position, an additional row of side sheets is put in place; but all work is done while the piston is hung on the special plates, and not while it is floating on air.

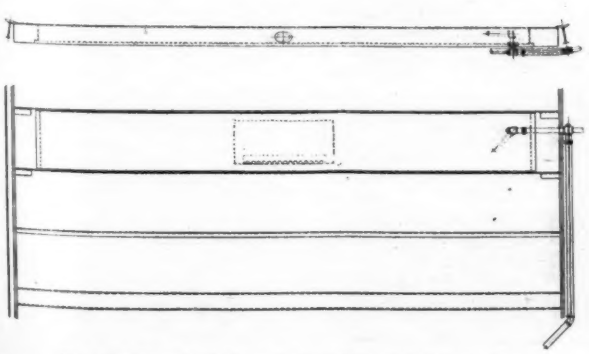
Two of these hook plates are attached to each column; the distance between these plates, or between the supporting points for the hook, being equal to the width of the holder sheets. As the piston is raised, following the completion of a row of sheets, the hook plates are raised to the next position. Thus no time is lost in the operation of raising the piston and locating it at the successive working levels. The scaffolding, from which



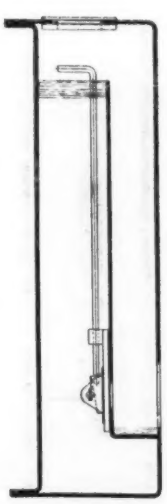
Cross-Section through Seal.



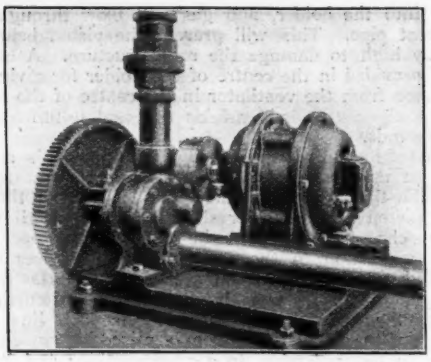
Enlarged Section of Rubbing Bar.



Plan and Elevation of Tar Storage Tank and Distributor.



Cross-Section.



Motor-Driven Tar Pump.

the men work in assembling and riveting on the outside of the holder, is hung from the piston or roof; consequently everything moves up as the piston rises.

One holder of this type having a capacity of something over 900,000 c.ft. used 91 KW.-H. in 26 days for pumping the tar which seeped past the rubbing-bar. During the month of December this same holder used 6·7 KW.-H., and during April 25 KW.-H. Thus the cost is nominal.

The advantages possessed by the waterless holder over those of the older type may be cited as follows:

Simpler foundations, due to the elimination of the heavy tank and the water required to fill the tank in the old type of holder. This permits installation on ground which, for the older type, would require excessive piling.

No cupping and uncupping of holder sections.

No oxidation of cups and grips.

Simpler operation in cold weather, due to the use of tar instead of water as the sealing medium.

Steam saving in winter, due to elimination of tank and cup heating.

Lower maintenance cost for painting the holder shell, since there is no submergence of any metal in water.

Improved appearance as a structure.

Uniform gas pressure for the entire capacity of the holder.

Larger capacity holder can be built on a given area.

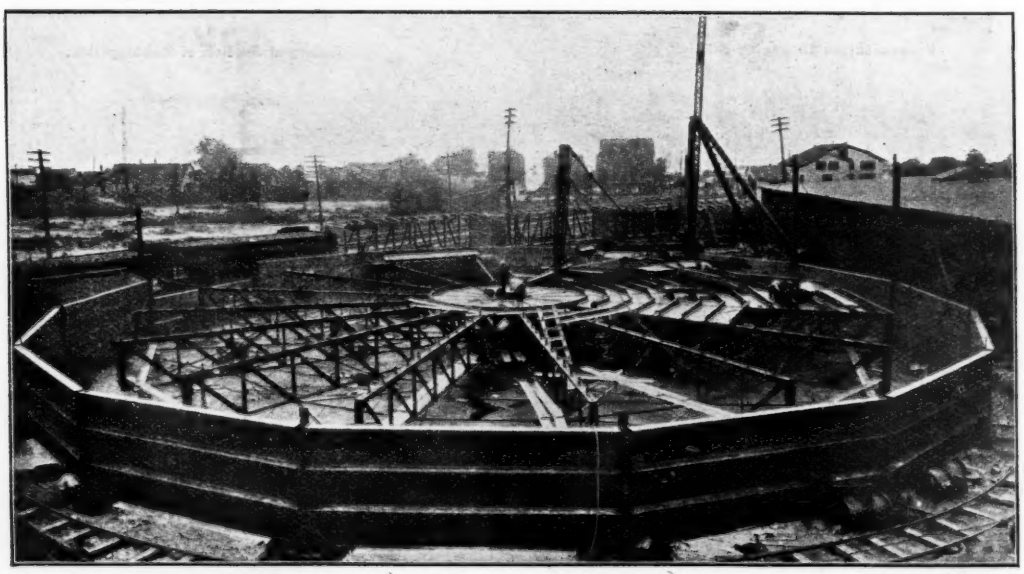
No shovelling of snow from crown of holder, since the roof always protects the piston from snow.

Inspection of practically the entire shell. No water has to be removed, and, with the piston in its lowest position, it is unnecessary to purge the space under the piston. The entire piston structure is accessible for inspection, since the plating is attached below the bottom chords of the piston truss. The windows in the top of the holder shell give adequate light for periodical inspections.

Low power consumption of the automatically operated tar pumps, which replace the sealing tar in the cup, and ensure a pre-determined depth of seal in the cup at all times.

The Bartlett Hayward Company built in 1876 their first holder of the water-tank type. This holder was of 500,000 c.ft. capacity. Up to date the total capacity of holders with water tanks built by the Bartlett Hayward Company amounts to 632,226,432 c.ft., or a total of 524 holders. It must be re-

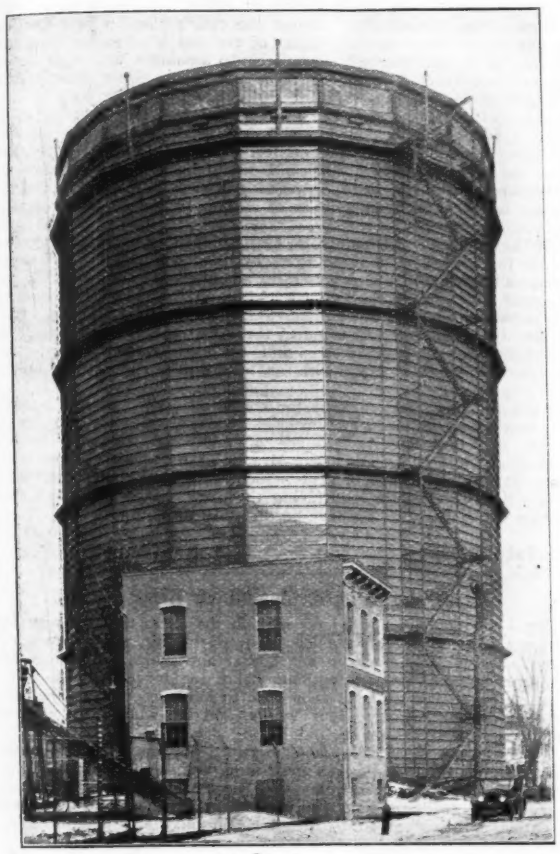
LOWERING THE BOTTOM OF A ONE-MILLION C.FT. HOLDER.



PISTON TRUSSES ASSEMBLED—1 MILLION C.FT. HOLDER.

membered that the great majority of the holders were of smaller capacity than is usual to-day. The average capacity for the 524 holders was 1,206,540 c.ft., although the list contains two of 15,000,000 c.ft., and some twelve of 10,000,000 c.ft.

The first order for a waterless holder was received a little more than a year ago—on May 7, 1924—and since that time the total capacity of holders of this newer type placed in service, or under course of construction, amounts to 73,000,000 c.ft., ranging in individual capacity from one of 500,000 c.ft. to three of 15,000,000 c.ft., or an average of 5,615,400 c.ft. each, and a little more than 11 p.ct. of the total capacity of water-tank holders built by this Company in 49 years.



3 Million Holder at Flushing, L.I., New York and Queen's Gas Company.

Theory and Practice of Combustion.

Messrs. Ernest Benn, Ltd., have added to the Chemical Engineering Library, Second Series, a book entitled "The Theory and Practice of Combustion," by J. E. Lister and C. Harman Harris (published at 6s. net). As the authors remark in a preface to the volume, the efficient operation and control of steam boiler and furnace plants call for a knowledge of the principles of combustion and of the requirements of different fuels and different types of furnace. They then set out to deal with the question of combustion as affecting the various classes of fuel in general use, from a practical as well as a theoretical point of view; and the information given will doubtless prove of interest and assistance to many who are concerned with the control of furnaces or steam boilers. The treatment of the subject is very elementary. Two chapters are devoted to the principles of combustion, two others give facts about the different fuels used, solid, liquid, and gaseous, and the remaining three deal with indicating and recording instruments, practical considerations affecting efficiency, and furnaces and stokers.

Specification for Cast-Iron Filter Plates and Frames.—The British Engineering Standards Association have recently issued a specification (No. 189-1925) for cast-iron filter plates and frames, which was prepared as a result of proposals received by the Joint Committee of British Chemical Manufacturers and the British Chemical Plant Manufacturers' Association. Adherence to existing practice has been adopted as far as possible, with a view to minimizing the introduction of fresh cloth widths, and enabling plates to be used in as many existing presses as possible. Copies of the specification may be obtained from the Association, Publications Department, No. 28, Victoria Street, London, S.W. 1, price 1s. 2d. post free.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Dr. Carpenter and the Reduction of Costs.

SIR,—In his eagerness to give battle, Mr. Halkett picks up the wrong weapon from his friend's armoury—it was a foil that I had in my hand, not a bludgeon. I was dealing in cross-examination with what this Company had done in the course of the last five years, and referred to the special machinery it had organized for scientific investigation. It is not fair to separate my answers from the context of the claims I had been urging—viz., that the London gas undertakings should have powers to unite their resources for, among other things, the provision of centralized research the functions of which would be to study and work out the problems of efficient coal carbonization.

But Mr. Halkett complains further of the manner in which I spoke of the Sheffield undertaking. If he will turn to the evidence, he will find at Question 342 that I stated its record was a very good one.

I am never unmindful of the courtesy always extended to me by those associated with that undertaking, and whose managerial ability I certainly did not intend to disparage.

CHARLES CARPENTER.

South Metropolitan Gas Company,
July 31, 1925.

Relative Efficiencies in Transmitting in Bulk—Electricity v. Gas.

SIR,—It is reported that Dr. Lander, in his paper before the Society of Chemical Industry at Leeds on July 16, stated:

> "Electrical energy can be carried long distances at a comparatively low cost. Generating stations may be installed at the pit mouth and the current thence distributed. Such a policy is more difficult of application to gas manufacture owing to the high cost of the necessary distributing mains."

This assertion, though generally and popularly believed to be fact, is not new, as it formed a part of the argument at the inception of the cry for super-electrical stations, by the electrical people themselves some years ago. Now that it is repeated by the Fuel Research Board it should again be set against the data produced in the Technical Press of some years ago, which showed it to be actually cheaper to transmit bulk gas.

Quoting from memory, the price of copper regulates the cost of distributing bulk electricity; and a sudden augmentation would send up the price of copper. Again, great latitude is given at present to electric cables—they may often be seen spanning across fields in close proximity to towns. It is more than likely that within a decade the development of flight and public opinion will decree that all cables shall go underground (as the new telephone cables), which will, of course, increase the cost.

Gas, on the other hand, can be sent through cheap concrete mains, steel mains, iron mains, and at increasing pressures (as yet unheard of in Britain), as already applied in U.S.A.

These factors were tabulated and compared, and as a result it was found that bulk gas could be more efficiently transmitted from colliery to town than could bulk electricity.

Again, it would be interesting to compare the proportion which distribution is of the selling price of gas and electric current.

Average cost of gas to user per therm, *minus* . .
" " " into holder per therm . . .
£

Average cost of current to user per therm, *minus*
" " " on to town main per therm
£

Furthermore, in such a scheme of bulk distribution from the colliery it would be fundamentally better to distribute the energy of coal as gas, because with gas electricity could be generated, whereas electricity cannot yield gas.

AD-REM.

Aug. 1, 1925.

Volatile Coke—Smokeless Coal.

SIR,—The recent papers contributed by Dr. Lander, Dr. Fishenden, and Mr. E. C. Evans to the Society of Chemical Industry, at Leeds, have again served to emphasize the importance of the smokeless solid fuel problem, particularly that fuel recovered from smoke-producing coals, and most profitably and easily secured by carbonization of such fuels.

As the matter is now recognized as being something more than an idealist's dream, and in reality touches a vital and crucial problem for the industry and the nation, perhaps a few remarks from me as to the *modus operandi* will be welcomed

The manufacture of the fuel which will answer the six requirements stipulated by Dr. Lander and Dr. Fishenden is certainly realizable by gas-works carbonization, and, the writer concurs, is economically only competitively realizable by a medium or high temperature process.

Is the gas industry going to stand aside and, through lack of competitive effort and initiative in the race, leave the desired objective to be reached by an external power, which perforce must then be encountered as a competitor not merely within the field of solid fuels, but also in that of liquid and gaseous, much to its own detriment?

Only the question of volatiles remains to be complied with. Let us now see how the *pros* and *cons* of such a procedure plan out. Let us for our estimate take the case of 7 p.ct. residual volatiles—that is, the equivalent of some 20 volatile therms. In order to isolate such a

fuel from a retort, &c., there are available two means therefor: (1) Reduction of temperature, and (2) earlier discharge. The former is limited to 800° to 900° C., as coking should be invariably carried to 750° C., if not 800° C., taking the general run of coals; whereas the latter is only readily possible with continuous retorts.

It will, however, be apparent that in the case of the ordinary horizontal, inclined, or vertical retort there are difficulties in the way of any such suggested procedure, comprising (1) reduced heating gradients causing longer coking times, (2) alteration in the quantity and quality of the volatile therm yields and the ratio of the liquid to gaseous yields, (3) higher thermal expenditure, (4) larger losses, to consider from the first factor, and (5) unequal carbonization, (6) increased labour operations, and (7) pre-cooling as an essential discharging condition, to consider from the second factor.

To realize the objective, therefore, the above reactions involved in the procedure must be turned to advantage and precluded from detracting from the efficiency of carbonization. A little consideration will show that, though this is impossible in the case of present high-temperature carbonizing systems, it is not so, and is inevitably assured, by the system for which the writer is responsible, wherein heating is combined external and internal, so that reduction of temperature does not involve cutting heat transmission, but merely diversion from one to the other (at a different temperature potential), with an augmented effect as resultant, and wherein, further, the rate of passage of coal through the retort—and this applies in a less accentuated degree to an externally-heated retort on the writer's system—can be considerably enhanced without the swelling difficulty and limitations which are an absolute inhibition upon all other systems passing more than can be properly coked in the top of the retort.

Further, as compared with horizontal practice, little loss of gaseous therms would result when steaming to the extent of 5 p.ct. a vertical retort so operated, while a solid fuel would ensue having a value comparable with, but which sold at rather less than the price of, raw coal, and would oust the latter very largely, if not entirely, and recoup most of the difference between the cost price of coal and the selling price of coke—viz., some 11s. per ton each. Further, in these circumstances the lower charge temperatures would result in higher thermal efficiency of carbonization; there would be reduction, and not prolongation, of the coking time; no unequal carbonization deleterious in its effects would result; and the labour charges would not be increased, as compared with present intermittent or continuous plants. Further, a rich gas yield of over 70 therms per ton, of greater distributive value, would ensue.

The system referred to has, it may be added, already proved capable of a throughput treble the realized throughputs (quadruple the guaranteed) of W.D. or G.W. vertical retorts of 3-ton size. This comparison is based upon normal complete carbonizing, from which it will be seen that for the suggested procedure some four to five times such outputs are certainly readily available.

Secondly, let us examine the financial aspect. Mr. M'Laurin has given a balance-sheet as follows:

	£
Revenue (one year's working):	
Semi-coke, 20,078 tons at 28s. 6d.	28,606
Oil, 569,400 galls. at 5d.	11,862
Ammonium sulphate, 282 tons at £7	1,974
Gas, 2,190,000 therms at 1d.	9,125
	£51,567
Expenditure:	£
Coal	36,500
Labour and supervision	2,737
Rent, rates, taxes, &c.	2,737
Interest and depreciation	6,000
Repairs, stores, and general charges	3,593
	£51,567

Varying the cost of coal, and balancing the same up in accordance with this balance-sheet, by selling coke accordingly, we have:

Cost of Coal.	Selling Price of Coke to Balance.
20s. ..	28s. 6d. (actual)
25s. ..	37s. 6d. (price of gas-works coal)
30s. ..	46s. 9d.
35s. ..	55s. 10d.

Evidently this process could not compete with high-temperature (gas-works) carbonizing using the same coals (technical considerations apart), and depends for its success upon cheap raw material. It could not, then, in the ordinary way function within the gas industry, even financially, quality of gas apart. A low-temperature process, to operate successfully within the gas industry, must be capable of producing a gas of enrichment value at an economic rate, or be competitively capable of making a saleable gas equivalent to the present gas sold, at the same time serving the solid fuel market. How? By increased throughput and diminished capital outlay alone is such a course practicable. It should also be thermally efficient.

As an example, the following yields realizable from an Everard-Davies plant are given (*i.e.*, operated for volatile coke):

Gas (*a*) c.ft. per ton coal	11,800 to 10,900
(*b*) B.Th.U. per c.ft.	600
(*c*) total therms	71 to 70 at 7d. to 10d. per therm
Oils (galls. dry)	13 to 15 at 5d. per gall.
Sulphate of ammonia (lbs.)	25 to 18 at 7d. per lb.
Smokeless fuel, cwt. (over-all)	14 to 13½ at 35s. per ton
Heating requirements	12 to 16 therms per ton of coal from above, as coke or gas

Dilution to 550 to 450 B.Th.U. according to the declared calorific value by manufacture of diluent gases (water gas) is, of course, readily conjoined to the above, and would not entail more than 30s. per ton of coal as the total other than raw fuel charges for manufacture and distribution, &c., of a gas made as above on a London works. The total therm yield would then still reach 75 to 100, according to the declared value of the gas. The margin of profit on a revenue account for the above procedure is found to yield considerable advantages, and compares favourably as regards the amount of capital used, as against the case of normal complete carbonizing, and certainly avoids the difficulty of surplus coke and dissatisfied customers.

WM. EVERARD DAVIES.

5, *Tynybedw Terrace, Treorchy, Glam.*,
Aug. 1, 1925.

Bitumen v. Tar.

SIR,—I have read with interest the two replies in your issue of to-day to my letter on the subject of tar and bitumen for road purposes. Both your correspondents seem to assume a lack of patriotism on my part which I may perhaps be allowed to assure them is quite unjustified. Certainly, if tar is really better for the purpose than bitumen, then let it be used by all means; but if the reverse is the case, I fail to see why sentimental considerations should be allowed to have any influence in the matter. In any case, I cannot allow that the superior suitability of tar is finally decided by the "say-so" of parties directly interested in pushing its sale. What I should like to see is the considered opinion of a road engineer with no axe to grind.

With regard to two points in Mr. Robinson's second paragraph. Crude tar *is* used for making roads by those who might very reasonably be expected to know better, to adopt his phrase. At this very moment a certain Rural Council in this neighbourhood is repairing its roads with crude tar purchased from a local gas-works. Also, if Mr. Robinson cares to come to the West of England, he will see some of the most awful roads that one could have the misfortune to drive over—and all made with tar. He would, I am afraid, lose his bet!

As a matter of fact, neither tar nor bitumen is a perfect material for road construction. The arterial roads of the not too distant future will undoubtedly be made of reinforced concrete. In this connection, may I suggest that Mr. Robinson and the other interested parties try their hands at inducing the Brooklands authorities to use their product for resurfacing the track. If it is of such marvellous value, they should have no difficulty in doing so.

MOTORIST.

July 31, 1925.

Fire at the Oughtibridge Silica Brick Works.

SIR,—No doubt you will have seen in the Press that we yesterday evening had a rather big fire caused by lightning, which practically demolished our top works tower house, and which will mean that we shall have to prepare without delay for reconstruction. This is being done; and we hope to be able to have a portion of the plant running in from three to four weeks, and the whole of it in from six to eight weeks.

We are favoured in being able to run a portion of the top works plant from our bottom works generating set; and we wish to impress upon our customers that they need have no fear as to delivery of any goods on order, or which may be ordered in the future. Attention is being given to the work in question; and all orders will receive prompt and careful attention, as in the past.

For the Oughtibridge Silica Firebrick Company, Ltd.,
EDWIN HALSTEAD,
Secretary.

Oughtibridge, near Sheffield,
July 30, 1925.

REGISTER OF PATENTS.

Carbonization of Bituminous Coals.—No. 236,002.

JOLLY, J. C., and WHEELER, R. V., both of Sheffield.

No. 10,746; May 1, 1924.

The object of this invention is to effect, in the process of carbonization of bituminous coal, a greater elimination of sulphur compounds, so that the percentage of sulphur in the coke residue is reduced, making it more suitable for metallurgical purposes than hitherto.

The sulphurization during carbonization can be accelerated by excess pressure above the normal of a reducing gas such as hydrogen or carbon monoxide; and it has already been proposed to mix with the bituminous coal under treatment either anthracite or a semi-anthracite coal, or a semi-bituminous coal or peat.

According to the present invention, the selected material is of such thermal stability that it will, particularly over a temperature range of 400° to 600° C., remain inert towards the coal under treatment as regards the provision of binding material such as might agglomerate the particles. It is preferred to use a coal of an anthracitic, semi-anthracitic, or semi-bituminous class; and as an example it may be stated that in applying the process to a South Wales bituminous coking coal, the coal for treatment is intimately mixed with a South Wales anthracite duff approximately in the proportions of four parts by weight of the bituminous coal to one part by weight of the anthracite. The process may be carried out by placing the mixture in a bye-product coke oven of common type and carbonizing at a temperature of about 1000° C.

Clip Carriage for Spiral Gasholders.—No. 236,142.

DEMPSTER, R. & J., LTD., SCOTT, J. W., and KNIGHT, H. S., all of Manchester.

No. 13,251; May 21, 1925.

This invention relates to that class of carriage, for the fixed axles on which roller-supports are revolubly mounted, in which the fixed

axle is held between a bottom plate and a curved plate termed a "clip"; the latter bolted to the former and to the tank top.

Hitherto these clips have been pressed into shape from sheets of metal, so that they have been of uniform thickness. It will be realized, however, that in operation the fixed axle is in the condition of a loaded cantilever, and therefore considerable pressure comes upon the edge of a clip nearest to the holder, and any tendency to split or yield at that edge may be disastrous.

The object of the invention is primarily to strengthen or stiffen the clip at the part referred to, and also as a whole. This is effected by means of a rib which thickens the clip adjacent to the holder; and further ribs may be provided on the width of the clip, so as to strengthen it as a whole.

Pipe Joints.—No. 236,308

STONE, J., & CO., LTD., of Deptford, MEAKIN, T. W., of Catford, S.E. 6, and PARKINSON, B. R., of Woodside Park, N. 12.

No. 9418; April 14, 1924.

This invention relates to connecting service pipes to gas, water, and other mains of thin gauge, by tube or nipple expansion. The subject of the patent was described and illustrated in an article entitled "The 'Du-Ex' Nipple," on p. 469 of the "JOURNAL" for May 13, 1925.

According to the invention, a double riveted effect is produced by the use of two internal beads or projections formed in the pipe or nipple; these beads being separated by a distance commensurate with the thickness of the wall of the main. When a tapered mandrel is forced or drawn through the nipple, a double expanding effect is produced, the pipe or nipple being riveted on both the inside and the outside of the main. The effect of this double expansion is to close up the contact between the nipple and the wall of the main so effectively that the joint is fluid-tight.

Gas Cock.—No. 236,362.

MAIDSTONE GAS COMPANY and BRADFORD, W. B., of Tovil.

No. 15,052; June 23, 1924.

The invention comprises a form of gas cock suitable for turning on and off lights, fires, or cookers. In appearance the cock is similar to the ordinary tumbler switch for electric light.

The body or casing with the plug mounted therein is attached by a flanged connection to a base member having inlet and outlet passages, and adapted to be embedded in the plaster of a wall, so that the complete body of the cock can be removed for renewal or repairs without disturbing either the line of pipe on which the cock is fixed, or the plaster in which the pipe is embedded.

Retort Settings.—No. 236,409.

BROOKE, R. M., of Halifax.

No. 20,138; Aug. 26, 1924.

This invention relates to the stay walls in retort settings; the object being to build them so that their upward expansion will be free and independent of the retorts themselves.

Those portions of the stay walls abutting upon the vertical sides of the retorts are built independent of, and are not bonded with, the brickwork supporting the retorts. The inner portion of the settings, which is subject to the greatest heat, is built with vertical stepped sides (opposite the upper tiers of retorts where the overlapping or converging of the latter takes place), the several sides being parallel to the corresponding sides of the retorts and their supports. An inclined block is arranged to rest upon the crown of each retort in the tiers aforesaid and against this setting, in such a manner that suitable spaces are left between such blocks and the corresponding shoulders of the inner setting immediately below the same. Or a similar space may be otherwise formed at this part.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for July 29.]

Nos. 18,419-18,995.

BAILEY, P. H.—"Coin-freed gas meters." No. 18,852.
BAILEY, P. H.—"Valves for gas meters." No. 18,853.
DIAZ, A. V.—"Gasification of liquid fuels." No. 18,897.
FLAVEL, P. W.—"Gas burners." No. 18,970.
FLAVEL, P. W.—"Gas cookers." No. 18,971.
FLAVEL, P. W.—"Gas cooking ovens." No. 18,972.
FORDE, H. A.—"Incandescent gas burners." No. 18,461.
GILBERT, A. G.—"Gas cooker safety clip." No. 18,916.
HARRISON, A. D.—"Apparatus for indicating flow of fluids in pipes." No. 18,930.
KENYON, G. H.—"Insertion of valves in gas and water pipes." No. 18,638.
M'CALLUM, P.—"Gas stoves, &c." No. 18,758.
NICHOLSON, A.—"Lighting systems." No. 18,732.
PRITZBUER, G.—"Distillation of bituminous fuels." No. 18,881.
RUSCOE & CO., LTD., J.—See Kenyon, G. H. No. 18,638.
SHAKESHAFT, C. E. M.—See Bailey, P. H. Nos. 18,852, 18,853.
SNELL, C. SCOTT.—See Forde, H. A. No. 18,461.
SPRAGUE METER COMPANY, LIMITED.—"Coin-freed mechanism." Nos. 18,422, 18,423.
STEVENS, W. A.—"Ignition device for gas-heated geysers." No. 18,562.
WIATT, J. P.—"Bunsen burners." No. 18,765.
WORTLEY, R. S.—See Sprague Meter Company, Limited. Nos. 18,422, 18,423.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Progress of Bills.

Barrow-in-Furness Corporation Bill: Reported from the Select Committee, with amendments; read the third time. Further amendment made, passed Returned to the Commons.

Bedwellty Urban District Council Bill: Returned from the Commons, with the amendments agreed to.

Stockton-on-Tees Corporation Bill: Read the third time, with the amendments, and passed; returned to the Commons.

Burnley Corporation Bill: Reported from the Select Committee, with amendments; read the third time.

Hoylake and West Kirby Urban District Council Bill: Returned from the Commons, agreed to, with amendments, which were considered and approved.

On behalf of the Northampton County Council, a petition has been presented against the Northampton Gas Order.

Special Orders.

It was reported that no petition had been presented against the Devizes Gas Order, Great Driffield Gas Order, Great Yarmouth Gas Order, and the Langley Mill and Heanor Gas Order. The Northampton Gas Order has been referred to a Select Committee.

HOUSE OF COMMONS.

Progress of Bills.

Hoylake and West Kirby Urban District Council Bill: As amended, considered; amendments made; read the third time, and passed.

Uckfield Gas and Electricity Bill: As amended, considered; an amendment made.

Oldham Corporation Bill: As amended, considered; amendments made, read the third time, and passed.

Burnley Corporation and the Stockton-on-Tees Corporation Bills: Lords amendments considered, and agreed to.

Mansfield Corporation Bill: Read the third time, and passed, with amendments.

Royal Assent.

The following Bills received the Royal Assent last Friday: Statutory Gas Companies (Electricity Supply Powers), Kirkcudbright Burgh Order Confirmation, Rochdale Corporation, South Metropolitan Gas, Bedwellty Urban District Council.

NORTHAMPTON GAS ORDER.

Application for a Further Hearing Granted.

The Special Orders Committee of the House of Lords, whose duty it is to examine Special Orders granted by Government Departments when submitted to the House for confirmation, met on Thursday, July 30. The EARL OF DONOUGHMORE (Lord Chairman) presided.

Among the Orders before the Committee were several granted by the Board of Trade dealing with gas matters—viz., the Great Yarmouth, Devizes, Great Driffield, Langley Mill and Heanor, and Northampton Gas Orders. In the case of the first four, no opposition was raised; but in the case of the last-named, granted to the Northampton Gas Light Company (for the purpose of extending the area of supply), the Northamptonshire County Council asked for a further hearing before the Order was confirmed. Mr. H. C. Honey (Director of Gas Administration at the Board of Trade) has already held an inquiry into the matter (see "JOURNAL" for April 8, p. 132), at which the Northamptonshire County Council asked for special protective clauses in respect of roads, on the ground that the provisions of the Gas-Works Clauses Act, 1847, were inadequate to meet modern traffic conditions. The Gas Company, however, opposed then, and the clauses asked for were not inserted. The Northamptonshire County Council on the present occasion asked the Special Orders Committee of the House of Lords to report to the House in favour of a further hearing. The machinery dealing with this matter is new; and this was the first occasion upon which the Special Orders Committee have been asked to report in favour of a further inquiry into an Order granted by the Board of Trade.

The Northamptonshire County Council were represented by Mr. R. F. PARKER (Messrs. Sharpe, Pritchard, & Co., Parliamentary Agents), and the Gas Company by Mr. S. E. CASH (Messrs. Vizard, Oldham, Crowder, & Cash, Parliamentary Agents).

Mr. PARKER said his case was that the provisions of the Gas-Works Clauses Act of 1847—which was passed nearly eighty years ago, and which gave the County Council the only protection they have at present—were completely inadequate to protect an important road authority at the present time. In 1847 roads were not the same as now. There were no concrete foundations; there were no steam-rollers and motor cars, and no heavy traffic such as exists to-day; and, further, there was no Ministry of Transport. He believed he could safely say that the sympathies of the Ministry of Transport on the broad question at issue were with the County Council. Something must be done—probably in the end by a Public Bill—but in the meantime the road authorities were left to their own devices. The County Council asked for the protection which had been given by agreement in a large number of cases since the war. In 1923 there were 23 Special Orders granted to public utility undertakers, many of which did not deal with road questions, but with

financial matters; and in those Orders there were 15 clauses giving additional protection to road authorities, be they county councils, local authorities, or railway companies responsible for roads over bridges. In 1924 there were 49 Orders, which included 46 such clauses. So the Committee would appreciate it was generally recognized that further protection than was given under the general law was necessary. He added that there was sitting at the present time a Committee, representative of gas, electricity, and water interests, and all parties interested in road repair, who were trying to settle what, if any, protection was necessary beyond that provided by the general law. That Committee had not yet arrived at a conclusion; but in the meantime it was necessary for the parties to follow the practice that had hitherto prevailed—namely, if they could not agree, to appeal to Parliament. It had been stated by the Northampton Gas Company that there had been a full hearing of the present case before the Board of Trade; but he entirely denied this. The practice of the Board of Trade hitherto had been to say that, unless there was agreement between the parties, they would not insert a protective clause. The County Council had asked the Board of Trade for further protection, and were perfectly prepared to give evidence and to go into the matter, if the Board of Trade would hear them judicially. The representative of the Board of Trade, however, following the practice of the Board, had said that he could not go into the matter or insert a clause unless the parties were agreed. In those ircumstances, Mr. Parker submitted that it would be very unfair to deny the County Council, who were performing public duties, the right to lay their case before a tribunal which was in a position to give a decision on the merits of the case.

The LORD CHAIRMAN asked if the Board of Trade inquiry was the only one that had taken place.

Mr. PARKER replied that it was. He added that he had cross-examined the Engineer to the Gas Company, who, to a large extent, had agreed that, on the merits, what the County Council claimed was fair and just. In spite of this, however, the promoters would not insert a clause for the protection of the County Council.

Mr. CASH, opposing the application, held that there was a full inquiry before the Board of Trade, in the sense that an objection had been put in by the County Council and had been replied to by the promoters; and the matter was fairly discussed. The Engineer to the Company had been cross-examined on certain comparatively small details. The facts were not quite as Mr. Parker had put them. This was not a special case relating to this particular Company, but was a case for the amendment of the Gas-Works Clauses Act. The position of the Company was somewhat peculiar, in that there was no road clause for the protection of the County Council in any of their Acts or Orders. In 1919 the Company were in Parliament; but the County Council had not then seen fit to petition against the Bill. The explanation of why they did nothing was that at that time they were very busy.

Mr. PARKER: And short-handed.

Mr. CASH said no doubt that was correct; but at the same time he was in a peculiar position, in that an electricity undertaking in the district, long since 1919—he was not sure whether it was in 1923 or 1924—had obtained an Order from the Ministry of Transport, and the County Council had not asked for a protective clause. The electricity undertaking was competing with the Gas Company, and he did not know why the County Council had not asked for protection against the electricity undertaking. It did seem to him an extraordinary thing that the Ministry of Transport, who were the responsible Department in connection with electricity and also with roads, did not see fit to put in a clause which was a variation of the general law, and yet the Gas Company should now be asked to insert such a clause for the special protection of the County Council. It might be said by Mr. Parker that the position with regard to electricity mains was different, because the matter was dealt with to some extent by the Electric Lighting Clauses Act of 1899; but, broadly speaking, he believed it was fair to say there was no really material difference with regard to the general law in that Act and in the Gas-Works Clauses Act. He urged that the grounds of complaint against the general law had already been sufficiently dealt with at the inquiry of the Board of Trade; and the submissions to the Board of Trade were the same as raised now in the County Council's petition. There were no other circumstances which necessitated further inquiry.

Mr. PARKER said it was true the decisions of Parliament before the war were, for the most part, against altering the powers of gas companies in this respect; but he urged that circumstances had altered very largely indeed since then. Practically speaking, the development of roads on modern lines had taken place since the war. With regard to the Electric Lighting Clauses Act of 1899, that was passed at a date which was a good deal nearer the present time than 1847; and one great difference between the two enactments was that, under the Gas-Works Clauses Act, in the case of a dispute the parties could go to the Justices, and could get a variety of decisions, probably different in individual counties, whereas under the Electric Lighting Clauses Act the parties went to the Ministry of Transport, who had a settled policy in regard to these matters. Generally speaking, he regarded the decisions of the Ministry in electric lighting matters as fair to the County Council when they had to go to the Ministry. He did not contend that the circumstances of the Northampton roads differed from those of other roads; but in other cases in Northampton the County Council had obtained the extra protection necessary in view of altering circumstances, except in the case of the Gas Company's 1919 Act, when the Council were short-handed and the matter was overlooked. The Gas Company had seen fit to give protection in their existing Acts and in this particular Order to other bodies; and the County Council were the one authority selected for unfavourable treatment. The Northampton Corporation were protected in the 1919 Act; and a railway company and a canal company were protected in the 1919 Act and the present Order.

Mr. CASH pointed out that the property of the railway company was private property.

The Committee deliberated in private, and decided to report to the House in favour of a further inquiry.

BEXHILL CORPORATION BILL.

This Bill was considered last week by the Local Legislation Committee of the House of Commons (presided over by Sir THOMAS ROBINSON). One of its objects is to confirm an agreement for the purchase by the Corporation of the undertaking of the Bexhill Water and Gas Company; and this matter was dealt with on Wednesday, July 29. Originally the Corporation sought power to purchase the undertaking by agreement or compulsorily (see "JOURNAL" for Jan. 14, p. 83). The Company deposited a petition against the Bill; but when it reached a Committee of the House of Lords (see "JOURNAL" for April 8, p. 130) it was announced that agreement had been arrived at. The terms of the agreement are now scheduled to the Bill; and there was no opposition by the Company on this occasion.

The agreement states that the issued capital of the Company consists of 2235 5 p.ct. preference shares of £10 each; 3400 original ordinary shares of £10 each, entitled to a maximum dividend of 10 p.ct. per annum; and 12,372 additional ordinary shares of £10 each, entitled to a maximum dividend of 7 p.ct. per annum. The Company have raised, by the issue of 4 p.ct. perpetual debenture stock, £48,000, and, by the issue of 7½ p.ct. redeemable debenture stock, a further sum of £30,000. There is also 7½ p.ct. redeemable debenture stock to the amount of £14,000 issued to the Westminster Bank, Ltd., to secure an overdraft.

The sale is to take effect as from Dec. 31 next (the appointed day). There are provisions with regard to the Corporation's taking over the liabilities of the Company. The Corporation are also to pay the Company £191,195 12s. It was stated during the proceedings on Wednesday that the total figure would be £292,000. If the sum of £191,195 12s. is not paid on Dec. 31, the Corporation are to pay thereafter interest at the rate of 6 p.ct. per annum.

Until the day of transfer the Company are to maintain and carry on their undertaking as heretofore in the ordinary course of business; but they shall not, without the previous consent of the Corporation under the hand of the Town Clerk, (*a*) enter into any new contract, agreement, liability, or other obligation in respect thereof which shall involve a capital expenditure of more than £1000; (*b*) make any general alteration in the rates, rents, or charges which were being demanded by the Company on March 21, 1925; or (*c*) increase the salary or wages payable to, or alter the terms which were applicable to, any officer or servant on March 21, 1925. But the consent of the Corporation to any such increase of salary or wages shall not be unreasonably withheld.

The Company are to be entitled, in respect of the half-year ended June 30, 1925, to declare dividends of 5 p.ct. per annum on the preference shares, 8 p.ct. per annum on the original ordinary shares, and £5 12s. p.ct. per annum on the additional ordinary shares. In respect of the half-year ending Dec. 31, 1925, dividends at the like rates shall be paid; and if the monies retained by the Company are insufficient for the purpose of meeting the interest on the debenture stock due on Dec. 31, and the dividends, the deficiency shall be provided by the Corporation.

With regard to compensation, Directors are to receive seven years' purchase of their annual fees, and the Auditors three years' purchase. The Corporation are to pay Mr. W. M. Jesty (Secretary) an annuity at the rate of £350, or shall retain him in their service at his present salary, as he may elect. In the case of the Engineers (Mr. L. G. Humphrys and Mr. C. P. King), the Corporation shall retain them at their present salaries, if they should elect to serve; but, if not, the Corporation are to pay half their present salaries until they shall have obtained positions at least equal to their present ones, and thereafter an annuity of one-fourth such present salaries. The Corporation shall also pay compensation to any officer or servant (other than those mentioned) in the regular employment of the Company who shall not be retained by the Corporation in the same or similar office or employment, and at the remuneration at which he was employed at the date of transfer, in respect of any loss of office or loss or diminution of salary by reason of the transfer; and no such officer or servant who shall have been in the service of the Company for fifteen years previous to Dec. 31, 1925, shall lose his right to compensation by reason of his declining within one month after that date to continue in the service of the Corporation. The amount of compensation payable to any such officer or servant is to be calculated in accordance with a scale laid down, based on the number of years' service with the Company. If, within five years after Dec. 31, 1925, the services of any officer or servant are dispensed with because those services are not required, and not on account of misconduct or incapacity, or if their salaries have been reduced through diminution of duties in consequence of the transfer, they shall be entitled to compensation. In awarding pensions or calculating superannuation allowance after Dec. 31, 1925, the Corporation are to take into account the continuous service with the Company.

The Company are to be authorized to distribute the purchase consideration by paying £10 for each preference share, and distributing the net residue of the consideration among the holders of the ordinary shares, on the basis that the holder of every additional ordinary share shall receive seven-tenths of the amount allocated to the holder of an original ordinary share.

If the Committee of Parliament make any material alteration to the agreement, it shall be competent to either party to withdraw. Should the purchase of the undertaking not have been completed by June 30, 1926, the Company shall be at liberty to determine the agreement, and the right of the Corporation to purchase the undertaking shall lapse.

Mr. ROWAND HARKER (for the Corporation) asked the Committee to consider this case as a special one, and to permit the Corporation to make a profit out of the gas undertaking. He explained that during practically the whole of the life of the Company they had carried on their water undertaking at a loss, and had made profits out of the gas undertaking. On the whole concern they had been able to pay, at any rate in recent years, fairly substantial dividends. The Company would not sell one part of their undertaking without the other—a quite reasonable position to take up—and the Corpora-

tion were advised that what they had to pay was a fair and proper price. Although he recognized that the Committee had a settled policy with regard to the conduct of municipal undertakings—viz., that each should stand on its own feet—he said that in this case there was great difficulty in allocating the amount of the total capital expended on either the water or the gas undertaking; and he asked that the Corporation should be allowed to balance the losses on the water undertaking by the profits on the gas undertaking, at any rate until such time as they could turn round and see exactly where they were. So far as one could judge, the Company had made a profit on gas of something in the neighbourhood of 5d. per therm.

Mr. *Arthur Valon* (Messrs. W. A. Valon & Son, Civil Engineers, Westminster), who has been advising the Corporation with regard to the gas undertaking, gave evidence. The area of the land on which the works were situated, and which adjoined the Southern Railway, comprised just under 4 acres, which was sufficient for the accommodation of works to manufacture 1,000,000 c.ft. a day; while the maximum output during 1924 was 454,000 c.ft. There was a siding from the railway to the works, by which coal could be delivered direct to the store. The capacity of the retort house was 500,000 c.ft. a day. There was also a carburetted water gas plant with a capacity of 150,000 c.ft. There were four purifiers, sufficient to deal with 700,000 c.ft. a day, and the capacity of the holders was 375,000 c.ft. The plant was in good condition, the retort house having been completely reconstructed within the last two years; and this would result in considerable economies. There were 31 miles of mains, and his examination of them had shown them to be in first-class condition.

Mr. *Arthur Collins* (Financial Adviser to Local Authorities) said that the price was just a shade over 17 years' purchase of the profits of 1924. He had carefully investigated the matter, and there had been a series of conferences; and he was perfectly satisfied that the price was one which could be considered fair and reasonable. He handed in a number of tables dealing with the working of the undertaking.

The CHAIRMAN, after the Committee had consulted in private, said they had carefully considered this difficult problem—difficult from the point of view of the Corporation—and would have preferred to follow their usual policy of separate accounts, each undertaking standing on its own feet, and working at cost, after making full provision for keeping the plant in an efficient state, providing for renewals, and making expenditure to reduce costs. They had, however, taken into consideration the special circumstances obtaining at Bexhill, and put forward the proposition that, for a period of seven years, the Corporation should be authorized to increase the price of gas in order to balance the loss on water. The Committee suggested this as a way out. With regard to reserve funds, the Committee would allow one for each undertaking up to one-tenth of the capital expenditure.

Mr. *Collins* said he should advise the Corporation to accept that without question.

The clauses of the Bill dealing with the gas and water undertakings were then considered. Those dealing with the confirmation of the agreement and the transfer of the undertaking were approved. There were a number of clauses giving powers to the Corporation with regard to the supply of gas, many of which were in the usual form. The maximum price was fixed at 1s. 5d. per therm. The present maximum price of the Company is 1s. 7d., and the actual price now charged 1s. 4½d. The purpose of one clause was to enable the Corporation to allow discounts not exceeding in any case 10 p.ct. to consumers in consideration of prompt payment of gas charges, and in addition thereto, or irrespective thereof, to allow discounts to large consumers not exceeding in any case 15 p.ct.; all discounts being of equal amount in like circumstances.

Mr. H. C. HONEY (Director of Gas Administration, Board of Trade) suggested that the limitation of discounts to 10 and 15 p.ct. would hamper the conduct of the undertaking, and the Corporation agreed to these limitations being deleted.

Another clause provided that the testing places should be prescribed by the Gas Referees as provided by the Gas Regulation Act, and that one of such testing places should be provided by the Corporation at the gas-works.

Mr. HONEY took exception to this clause, on the ground that, whatever the Gas Referees thought about the need for providing a testing place at the works, the Corporation would be bound to put one there, though it might be unnecessary, and mean useless expenditure. Section 5 of the Gas Regulation Act, which gave power to prescribe tests, was already incorporated; and he considered the present clause unnecessary.

The clause was deleted.

The "Pinner" clause (as agreed to by the National Gas Council and the Railway Companies), relieving the Corporation from the obligation to supply gas for other than lighting and domestic purposes from mains of insufficient capacity, was inserted. During the discussion, Counsel referred to it as "Mr. Honey's clause;" but Mr. Honey said he was not responsible for it, and, in fact, expressed himself as not too satisfied with the drafting of it.

The clause giving the Corporation power to refuse a supply of gas or electricity to any person whose payments for the supply of either are in arrear, whether such payments are due in respect of premises to which the supply is demanded or in respect of other premises, was the subject of reports from the Board of Trade, the Home Office, and the Ministry of Transport. These Departments have objected to the insertion of the clause in other Bills; but Committees of both Houses have inserted it.

Mr. HONEY said the objection of the Board of Trade was that the clause was so wide that, if a man had a *bona fide* case for withholding payment of his gas accounts in respect of his private house, he might be unable to get a supply of electricity for his business premises. The matter had been discussed by other Committees, however, and the Board of Trade did not press the objection.

No further representations were made to the Committee on behalf of the other two Departments, and the Committee allowed the clause.

With regard to the period for repayment of the money to be borrowed by the Corporation for the purchase of the undertaking, and for defraying the costs and expenses incidental to the purchase and transfer, the promoters asked for 50 years, the Ministry of Health suggested 40, and the Committee allowed 45.

Among the new clauses added to the Bill was one for the protection of the East Sussex County Council. This provided that pipes laid along main roads within the rural districts of Hailsham and Battle should be put in such position as the County Council might reasonably direct. The provisions of the Gas-Works Clauses Act, 1847, with respect to the breaking-up of streets, were applied; but the notice required under section 8 of the Act of 1847 was increased from three to seven days. The Corporation are not to interfere with the structural part of county or main road bridges within the rural districts mentioned, without the consent of the County Council; but consent shall be deemed to have been given if the County Council do not raise objection within a month after the necessary plans have been submitted. The expenses incurred by the Corporation in altering the position of mains as the result of the County Council altering the level of, deviating, or improving main roads, are to be borne by the County Council. The County Council are not to be liable for damage to mains laid at insufficient depth, arising from reasonable use of steam rollers or the passage of traffic.

BURNLEY CORPORATION BILL.

This Bill (see "JOURNAL" for Jan. 21, p. 142, and July 1, p. 53) was under consideration by a Committee of the House of Lords last week. There are no substantial alterations in the gas clauses.

BARROW-IN-FURNESS CORPORATION BILL.

This Bill (see "JOURNAL" for Jan. 21, p. 142, and April 15, p. 187) was last week before a Committee of the House of Lords, presided over by Lord Strachie. There are no material alterations to the gas clauses.

MISCELLANEOUS NEWS.

GAS REGULATION ACT APPLICATIONS.

The following notices have appeared in the "London Gazette" regarding applications to the Board of Trade under the Act.

DECLARATIONS OF CALORIFIC POWER

Biggleswade and District Gas Company, Ltd.—475 B.Th.U. (Sept. 30.)

Monmouth Gas and Water Company, Ltd.—500 B.Th.U. (Oct. 29.)

Scunthorpe and Frodingham Urban District Council.—425 B.Th.U. (Nov. 1.)

MANSFIELD GAS UNDERTAKING.

Though the profit made in connection with the Mansfield Corporation gas undertaking last year fell considerably short of the amount realized in the preceding twelve months, those concerned in its administration had no substantial reason for dissatisfaction, having regard to the fact that the diminution was solely attributable to the reductions which had been made in the prices charged—namely, 6d. per 1000 c.ft. in Mansfield itself from July, 1924, and 1s. at Mansfield Woodhouse from April last year, the cost thereby involved being £4670. The gross profit was £10,424, compared with £15,658 in the previous annual period; and after making the usual allowances in regard to sinking funds, &c., there remained a net profit of £1172, against £6643 a year ago. Besides the loss involved through reduction in prices, Mr. F. Hardy (who moved the adoption of the report, in the absence of the Chairman) pointed out that an increase in the average price of coal, oil, &c., had also to be taken into account. The amount of gas sold during the year showed an increase of 2 p.ct. Leakage was naturally always heavy in a colliery district: but the figure had been reduced from 13·6 p.ct. last year to 11·97 p.ct. of the gas sent out.

Alderman Norris directed attention to a recommendation of the Gas Committee that the net profit of £1172 be transferred to reserve, and that £6088 be paid out of that fund into the sinking fund to meet depreciation of India 3 p.ct. stock. He moved that this part of the report should be referred back to the consideration of the Council in Committee. Mr. Ward, seconding the proposal, pointed out that the Corporation held a lot of this stock. Mr. F. Hardy said it was really a matter for the Finance Committee. If, however, the members did not understand what it really meant, it would be better to explain fully the position to them in Committee. Mr. Pollard: It is clear the money is not there; and it looks as though somebody had been gambling with the ratepayers' funds.

The amendment referring this matter back to the consideration of the Council in Committee was carried; the remainder of the report being adopted.

Annual Report at Lancaster.—The annual report of Mr. G. Dixon, Manager and Engineer of the Lancaster Corporation Gas Department, shows that the receipts for the past financial year were £78,075, and the expenditure £63,428, giving a gross profit of £14,647, and a net profit of £4124. Of this, £2000 goes to the rates, and £2124 to the reserve fund. Residuals realized £21,840, or 74·4 p.ct. of the total cost of coal, against 89·5 p.ct. in the previous year. The average price of gas was 2s. 7·18d. per 1000 c.ft.

WELSBACH LIGHT COMPANY, LTD.

The Directors' report, which, with the statement of accounts for the financial year ended March 31, is to be submitted to the shareholders in the Welsbach Light Company, Ltd., at the meeting to-day, states that the period has been extremely difficult, owing to fierce foreign competition, intensified by the discontinuance in August last of the partial safeguarding afforded to the gas mantle industry by Part II. of the Safeguarding of Industries Act, 1921, under which a duty was imposed on gas mantles imported from Germany. With the view of adopting a united policy in meeting foreign competition, and of improving the conditions under which the home industry is carried on, steps have been taken towards consolidating the position of British gas mantle manufacturers.

During the present year H.M. Government set up new procedure for safeguarding industries. Under the stringent conditions thereby laid down the British gas mantle industry made out to the satisfaction of the Board of Trade a *prima facie* case for an inquiry as to the imposition of a duty upon imported gas mantles. The Committee appointed by the Board of Trade heard and investigated the case, and are considering their report and recommendation. In the event of a favourable report, and of its adoption by the Government and Parliament, a duty will be imposed upon all gas mantles imported into this country from all foreign countries, and not merely from Germany. The imposition of an adequate duty would offset the unfair advantage of lower wages, indifferent labour conditions, and cheap raw material, which at present enable the foreign competitor to flood our home markets, and would bring about a revival of the British gas mantle industry.

The difficulties previously mentioned, while absorbing much care and attention, have not prevented, though they may have retarded, the development by the Company of ancillary lines of business, the volume of which is being steadily increased, while the quality associated with Welsbach products is fully maintained. The adverse conditions of trade in general, and of export trade in particular, have injuriously affected a subsidiary of the Company, a considerable portion of whose business is normally of an export character. This matter has constantly received the anxious consideration of the Board, and measures have been adopted to reorganize the undertaking and to reduce expenditure, without sacrificing a business which has previously yielded substantial profits.

The policy of largely conserving, in more prosperous years, the profits of the Welsbach Company, enables the Board now to put before the shareholders the recommendations stated below:

	£ s. d.
After debiting to profit and loss account the loss made by the subsidiary Company above referred to (£6997 15s. 6d.) and crediting £17,188 2s. 3d. no longer required for Inland Revenue taxation reserve, the balance (subject to income-tax) to credit of the profit and loss account is	11,227 12 7
Add balance brought forward from last year	22,966 0 11
Making a total to credit of profit and loss account of	£34,193 13 6
Out of which the Board recommend:	£ s. d.
The transfer to general reserve (at present £64,000) of:	
Discount on debenture stock redeemed during the year	584 2 6
Profit on realization of investments	238 11 2
The payment of a dividend of 5 p.ct. (less income-tax) on the issued share capital	12,896 5 0
Leaving a balance to be carried forward (subject to income-tax) of	20,474 14 10
	£34,193 13 6

TRADE NOTES.

Wollaston Water Softening.

In a booklet issued by Wollaston Gas Producers (Manchester), Ltd., are illustrations typical of the many "lime-soda" water-softening plants designed during the last twenty-five years by Mr. T. Roland Wollaston, M.Inst.Mech.E., now Chief Engineer of the Company. An important feature of the plants has been avoidance of standardization, as conditions met with in practice differ so widely. The essential and distinctive features embodied in the designs are: (1) The employment of a separate reaction tank, in which all grease and organic impurity are separated from water without filtration; and the well-known effect of utilizing old sludge to accelerate sedimentation is introduced. (2) The use of two chemical preparing tanks, one as standby to the other, so that reagent charges may be prepared (once a day) at any time convenient. (3) Automatic chemical regulating gear of ample proportions, frictionless, large, positive, slow running, finely accurate at all rates, air-cushioned, and very strongly constructed in steel plate, electrically welded. (4) Automatic coagulating gear (when required) for dealing with organically foul and greasy water supplies.

CONTRACTS OPEN.

Oxide of Iron.

Tenders are invited by the City of Stoke-on-Trent Gas Department for the supply of 350 tons of oxide. [See advert. on p. 349.]

Coal.

The Lurgan Town Council are inviting tenders for the supply of approximately 5850 tons of coal for their gas and water works. [See advert. on p. 349.]

EXTENSIONS.

Mainlaying at Walsall.

The laying of gas mains from Barr Common to Factory Lane, at an estimated cost of £700, was authorized by the Walsall Town Council last week, on the understanding that the work ranks for Government assistance as an unemployment relief scheme.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

Trade during the past week, at the height of the crisis, was naturally almost at a standstill, and, all available supplies having been previously booked, it was a question of getting shipments completed in time.

The end of the tension, of course, came as a certain relief to everyone, but at present the nature of the assistance that is to be given is too indefinite for discussion. Uncertainty prevails as to how the market will open after the holiday, and fitters hardly know what prices to make, or to what extent the new scheme, when and if it is put into shape, will allow of competition with cheap German coals. Certain it is that the extra stocks which have been laid-in in prospect of a stop during the last few weeks will not help the position for August. A feature throughout the crisis, too, has been the indifference of foreign consumers.

Nominal prices on Saturday for gas coals appeared to be in the region of 19s. 6d. f.o.b. for Wear Specials, 18s. for best qualities, and 16s. for seconds. Coking makes were indicated at 15s. 6d. to 16s., and bunkers up to 17s. 6d. for superior qualities. It seems doubtful whether these prices can attract any business, and no doubt the market will attempt to find its level after the Bank Holiday.

COAL TRADE IN THE MIDLANDS.

From our Local Correspondent.

A notable feature of the crisis, now happily averted, was the absence of panic buying. Certain precautions were undoubtedly taken to tide over temporary difficulties; but there was no severe pressure on the collieries or on merchants to secure large stocks. The fact is that most of the heavy consuming industries in this district are so short of orders that they would not be seriously incommoded by a few weeks' stoppage. The coal owners took advantage of the crisis to withdraw all special summer prices. There will be no coal raised in this district for about a week, but industrial establishments have sufficient supplies on which to make a resumption, while the bulk of the householders in the city have laid in their winter stocks rather earlier than usual. Supplies of most descriptions of fuel are tight, the position being aggravated by delays in traffic.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

The situation is rather complicated at present, and while in the majority of instances prices have ruled above the normal, there seems to be sufficient coal available to keep the necessary industries going for three months.

Gas concerns, owing to the mild weather and long days, do not exhibit any anxiety, having sufficient fuel in stock for some time ahead. The market is in a very unsettled state; but as there is no likelihood of a stoppage, there will probably be something of a slump in regard to next month's trade, as there is a considerable quantity of coal en route in wagons which will react in regard to new sales.

Metropolitan Gas Company of Melbourne.—Messrs. John Terry & Co. (as agents) have received a cablegram from their principals, the Metropolitan Gas Company of Melbourne, informing them that the profits for the six months to June 30 last were £110,180. A dividend of 7s. 6d. per share has been declared, an amount of £25,000 has been transferred to the reserve account, and a sum of £74,400 has been carried forward. Dividends will be payable in Melbourne probably on the 1st inst., and those to absentee shareholders will be posted by an early mail.

Safeguarding of Industry.—The question of the safeguarding of British industry, with a demand for prompt Government action, was considered last Thursday week at a largely attended meeting of Birmingham and Midland manufacturers in the Queen's Hotel. Resolutions were passed insisting that any industry which came under the Trade Boards Act should be deemed to come within the definition of a substantial industry under the Safeguarding of Industries Act; and that, in the event of an industry being granted protection under the Safeguarding of Industries Act, any duty imposed shall be effective from the date of application.

Bo'ness Gas Light Company, Ltd.—On the past year's working the Company have declared a dividend of 8 p.ct., free of tax, the same as for the previous year; and in moving the adoption of the report, the Chairman (Mr. D. K. Harrower) said the price of gas (4s. 7d. per 1000 c.ft.) was very reasonable, having regard to the size of the works. If the output could be increased by (say) 40 p.ct., they would be able to reduce the price of gas very considerably; but on the present make of 37,000,000 c.ft. he regretted—especially in view of the low price of residuals—that no reduction was possible. The Manager reported that the coal carbonized amounted to 2690 tons; the average make being 12,500 c.ft. per ton.

Birmingham Corporation Accounts.—There is to hand from Mr. J. R. Johnson, F.S.A.A. (Treasurer of the City), a copy of the Birmingham financial statement for the year ended March 31 last, which reveals a revenue turnover of nearly twelve million pounds. The total revenue of the Gas Department was £2,344,136, while the working expenses amounted to £2,220,297, leaving a gross profit of £123,839. The loan charges were £160,358, and consequently there was a net loss of £36,519. This deficit, and an appropriation to the rates of £42,000, have been met by the transfer of £78,519 from the reserve fund. The sum standing to the credit of the reserve fund at the close of the financial year was £3641, and that at the credit of the special expenditure account £45,825.

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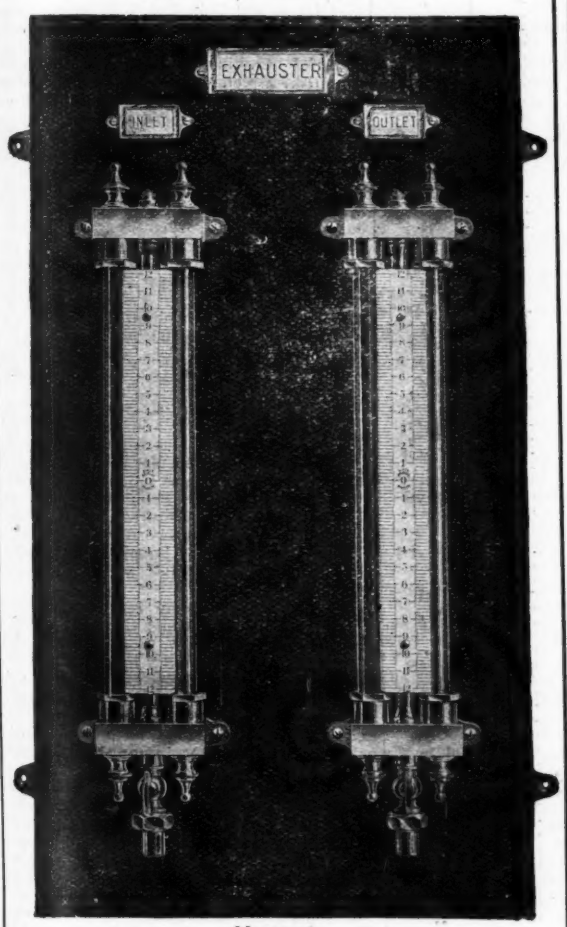

No. 146.

SAWER & PURVES

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CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *July* 31.

There is nothing new to report in the London tar products market. Little business is being done in pitch, and the price is unchanged at 42s. 6d. per ton, in bulk, at makers' works.

Creosote is steady at about 6¾d. per gallon, in bulk, at works.

Tar spirits continue in demand, and are firm.

Pure benzole and pure toluole stand at about 2s. per gallon, with solvent naphtha at 1s. 9d. per gallon.

Tar Products in the Provinces.

August 4.

The markets for tar products are unaltered, and business generally is very dull indeed.

The market for pitch is very quiet. It is reported that Spanish orders have recently been taken at figures which cannot leave more than 37s. f.o.b. United Kingdom port. Now that the threat of an immediate coal strike has passed away, it remains to be seen what the effect of this will be upon the market.

Creosote continues steady; but foreign buyers are still refraining from purchasing.

The demand for benzole and solvent naphtha continues at good prices.

All other products are depressed and difficult to sell.

The average values for gas-works products during last week were: Gas-works coal-tar, 25s. 6d. to 30s. 6d. Pitch, East Coast, 38s. to 39s. f.o.b. West Coast—Manchester, 33s. to 34s.; Liverpool, 34s. to 35s.; Clyde, 37s. to 38s. Benzole, 90 p.ct., North, 1s. 7¼d. to 1s. 8¼d.; crude, 65 p.ct., at 120° C., 1s. to 1s. 1d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 7¼d. to 1s. 8¼d. Toluole, naked, North, 1s. 6½d. to 1s. 7½d., nominal. Coal-tar crude naphtha, in bulk, North, 7¼d. to 8¼d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 5d. Heavy naphtha, North, 1s. to 1s. 2d. Creosote, in bulk, North, liquid, 5¾d. to 6d.; salty, 5¾d. to 5⅞d.; Scotland, 5¼d. to 5¾d. Heavy oils, in bulk, North, 6¼d. to 7d. Carbolic acid, 1s. 4d. to 1s. 5d. prompt. Naphthalene, £11 to £14; salts, £4 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality unsaleable.

BRITISH SULPHATE OF AMMONIA FEDERATION PRICES.

The British Sulphate of Ammonia Federation, Ltd., in announcing their home prices for the September to November season, write: "We are arranging as far as possible to reserve sufficient quantities of sulphate of ammonia for the home market, but owing to the depression in the iron and steel and other industries, the production has been reduced, and may be still further curtailed if a stoppage occurs in the coal trade. We trust, therefore, that you will advise your farmer customers to order supplies early this year.

"As no ordinary quality is likely to be available for the months named, we refrain from quoting a price for this quality.

"We offer to sell sulphate of ammonia for home agricultural use at the following prices: September, £12 7s.; October, £12 9s.; November, £12 11s. per ton for neutral quality in fine friable condition, free from lumps, basis 21·1 p.ct. nitrogen. Delivered to consumer's nearest station or wharf in Great Britain, for prompt cash payment, in lots of 4 tons and upwards. Neutral sulphate of ammonia as described above, guaranteed not to contain more than 0·025 p.ct. free acid, will be sold on the basis of 21·1 p.ct. nitrogen with no charge if over 21·1 p.ct." The allowances are as stated in the "JOURNAL" for July 2, 1924, p. 196.

Portsea Island Gas Light Company.

The report of the Directors for the half-year ended June 30, which is to be submitted to the proprietors at the half-yearly general meeting on Friday, Aug. 14, states that there is an available balance of £62,822. The Directors recommend that a dividend be declared for the half-year ended June 30 at the following rates per annum: 14 p.ct. on the "A" and "B" shares; 13 p.ct. on the "C" shares; 11 p.ct. on the "D" and "E" shares; and 5 p.ct. on the 5 p.ct. (maximum) stock, payable, less income-tax, on Sept. 1. This will leave £42,532 to be carried forward. The progressive increase in the quantity of gas sold, in the number of consumers, and in the gas consuming appliances issued, it is stated, was well maintained. In order to provide for the continuous development of business, and with the object of bringing the regulations contained in the Company's older Acts and Orders into line with present-day practice, an application has been made to the Board of Trade for statutory authority to create and raise additional capital; to convert and consolidate the existing ordinary capital; to extend the limits of gas supply; to change the name of the Company; and for other purposes. Authority is also sought to give effect to a provisional agreement which has been made for the acquisition of the undertaking of the Havant Gas Company. Immediately upon the termination of the ordinary meeting an extraordinary general meeting will be held for the purpose of considering a resolution approving of this application. The Directors recommend donations of £100 and £10 10s. to the Royal Portsmouth Hospital, and the Portsmouth and Southern Counties Eye and Ear Hospital respectively; also the distribution of 100 tons of coke among the poor residents within the limits of the Company's supply during the ensuing winter.

New Capital for Windermere.—The Windermere District Gas and Water Company are offering for tender 400 water-works 6 p.ct. preference shares of £10, at a minimum price of par. Tenders should be forwarded to the Secretary, at Windermere. The Company are also prepared to borrow up to £3500 on mortgage.

STOCK MARKET REPORT.

THE coal dispute completely dominated the Stock Markets last week, and conditions became more and more intense as each day passed; but on the announcement of the Government's decision to afford temporary relief to the industry, an appreciable recovery took place.

A satisfactory feature of the week was the success of the South African Loan, which was over-subscribed. The market conditions were less favourable than had been the case at the time of the Australian Loan, and the result indicates confidence in this class of security.

The uncertain labour outlook and the reduced dividends further depressed the Home Rail market, and there was a glut of sellers.

In the Industrial Market the week has been described as a Courtauld week. This company's shares advanced 9s., and a record price of 118s. 3d. was touched. When it is remembered that they have been bought this year at as low a figure as 68s. 6d., one is inclined to think that high-water mark has been reached, and holders should consider whether it is desirable that at least a portion of their holdings should be disposed of.

In the Gas Market the business done was not so extensive as usual, doubtless owing to the holiday season. Prominence was given to the Continental Union ordinary stock by reason of the Directors' announcement that it was proposed to pay on October 5 next a dividend of 2 p.ct. on this stock. This is the first distribution since 1913-14, when 19s. 4d. p.ct. was paid. The yield at the price of 39 is £5 2s. 6d. p.ct., which is rather low, but there is, of course, the prospect of an ultimate further increase in the dividend. The passing of the Gas Light and Coke Company's Bill, which is now, we believe, an Act, brought about no improvement in the price of that Company's stock, which in fact depreciated one point on the week. Among other variations, Wandsworth "A" fell 4, to 123-128; Liverpool 1½, to 84½-85; South Suburban rose 2 points, to 92-97, and Cape Town 1, to 6½-7½, a very appreciable improvement.

The following transactions were recorded during the week:

On Monday, British 105⅛, 106, Commercial 4 p.ct. 80½ *ex* div., Continental Union 36⅛, 37, 7 p.ct. preference 87, European 6⅞ *ex* div., Gas Light and Coke 83¼, 83⅜, 3½ p.ct. maximum 61½, 4 p.ct. preference 78½, Hastings and St. Leonards 5 p.ct. converted 94, 94½, Imperial Continental 139, 140, Primitiva 8s. 10½d., 4 p.ct. (River Plate) 64, San Paulo 6 p.ct. preference 8, South Metropolitan 92½, 92⅞, South Suburban 5 p.ct. 94 *ex* div., 5 p.ct. debenture 93. Supplementary prices, Bath 5 p.ct. maximum 94½, Consumers of Toronto 10, 10½.

On Tuesday, Bombay 18s. 9d., Brentford "A" 96, Commercial 4 p.ct. 80 *ex* div., 3½ p.ct. 80 *ex* div., 3 p.ct. debenture 57, Continental Union 36⅛, Gas Light and Coke 84, 4 p.ct. preference 77⅜, 3 p.ct. debenture 58¾, Hongkong and China 18, Imperial Continental 139, Primitiva 8s. 10½d., San Paulo 6 p.ct. preference 8⅛, South Metropolitan 92½, 6½ p.ct. debenture 103, South Suburban 5 p.ct. 94½ *ex* div. Supplementary prices, Colombo Gas and Water 11⅞, 12, York Town and Blackwater 7 p.ct. 10¼.

On Wednesday, British 105⅛, Commercial 4 p.ct. 81 *ex* div., Continental Union 37⅛, European 7⅛ *ex* div., Gas Light and Coke 83, 83½, 3½ p.ct. maximum 61, 4 p.ct. preference 78, Imperial Continental 140, 141, Montevideo 67, 68½, Oriental 103, Primitiva 8s. 6d., 9s., San Paulo 5 p.ct. debentures 42⅜, 43¼, South Metropolitan 92, Wandsworth "A" 124. Wimbledon 5 p.ct. 102. Supplementary prices, Grays and Tilbury "B" 8⅝, 8¾, Liverpool 5 p.ct. 84⅜.

On Thursday, Bombay 19s. 3d., European 6⅞ *ex* div., Gas Light and Coke 83, Imperial Continental 140½, 141½, South Metropolitan 92⅜, 92⅞, Tottenham "B" 91 *ex* div.

On Friday, British 105¼, Commercial 3 p.ct. debenture 57, Gas Light and Coke 83½, 4 p.ct. preference 79, 3 p.ct. debenture 60, 60½, Imperial Continental 141½, Primitiva 8s. 6d., 9s. 1½d., South Metropolitan 3 p.ct. debenture 58½.

In Lombard Street there was a keen demand for loans, owing partly to a heavy foreign settlement and partly to calls in respect of new issues. Treasury Bills were placed at an average of £4 5s. 0·44d. p.ct., or about 1s. 6d. p.ct. above the average for the previous week.

The principal movements in the Foreign Exchange Market occurred in the neutral exchanges. There were sharp rises in the Norwegian and Danish currencies. Sterling on New York closed at $4.85⅝; French francs at 105.40; and Italian lire at 132⅛.

Silver, on Chinese buying, hardened to 32d. per oz. Gold remained at 84s. 11½d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on March 5. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3½ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. July 31.	Rise + or Fall − on Week.	Transactions Lowest and Highest Prices.
£			°/₀ p.a.	°/₀ p.a.				
171,978	Stk.	Feb. 5	5	5	Aldershot 5 p.c. max. C.	77—80	..	..
295,492	"	"	4	4	Do. 4 p.c. Pref.	71—76	..	..
1,551,868	"	Apl. 2	6½	6½	Alliance & Dublin Ord.	63—63	..	..
374,000	"	July 9	4	4	Do. 4 p.c. Deb.	60—65	..	..
300,000	1	May 7	1/7⅛	1/7⅛	Bombay, Ltd.	⅞—1	−1/16	18/9—19/3
170,000	10	Mar. 5	8½	8½	Bournemouth 5 p.c.	12—13	..	..
425,050	10	"	7	7	Do. B 7 p.c..	12½—12¾	..	..
150,000	10	"	6	6	Do. Pref. 6 p.c..	11—12	..	..
50,000	Stk.	June 25	3	3	Do. 3 p.c. Deb..	56—59	..	..
162,025	"	"	4	4	Do. 4 p.c. Deb..	77—80	..	..
992,045	"	July 9	6⅛	6⅛	Brentford A Con.	93—98	..	96
990,500	"	"	6⅜	6½	Do. B New	93—98	..	..
76,000	"	"	5	5	Do. 5 p.c. Pref.	93—96	..	..
306,690	"	June 11	4	4	Do. 4 p.c. Deb.	75—80	..	..
181,337	"	"	6	6	Do. 6 p.c. Rich. Red. Deb.	100—105	..	..
214,740	"	Mar. 5	12½	12½	Brighton & Hove Orig.	165—170	..	..
244,200	"	"	8½	9½	Do. A Ord.	122—125	..	..
1,287,500	"	Feb. 19	4	5	Bristol 5 p.c. max..	96½—97½*a*	..	..
855,000	"	Mar. 19	8	7	British Ord.	104—109	..	104½—106
100,000	"	June 25	7	7	Do. 7 p.c. Pref..	120—125	..	..
120,000	"	"	4	4	Do. 4 p.c. Red. Deb..	71—76	..	..
100,000	10	May 21	6	8	Cape Town, Ltd.	6½—7½	+1	..
100,000	10	Apl. 23	4½	4½	Cardiff Con. Ord.	5½—6½	−½	..
150,000	Stk.	June 25	4½	4½	Do. 4½ p.c. Deb..	69—74	..	..
626,860	"	July 23	6	6	Cardiff Con. Ord.	98—101*	..	..
237,860	"	June 25	7½	7½	Do. 7½ p.c. Red. Deb..	101—104	..	..
157,150	"	Feb. 19	5	6½	Chester 5 p.c. Ord.	90—95*b*	+½	..
1,513,280	"	July 23	5/14/8	5⅜	Commercial 4 p.c. Cap.	80—85*	..	80—81
560,000	"	"	5⅜	5/3/4	Do. 3½ p.c. Cap.	80—85*	..	80
475,000	"	June 11	3	3	Do. 3 p.c. Deb.	56—59	..	57
800,000	"	14 Jan. 15	—	—	Continental Union, Ltd.	35—40	..	36½—37
200,000	"	June 11	7	7	Do. 7 p.c. Pref.	85—89	..	87
660,000	"	Mar. 5	6½	6½	Croydon sliding scale	98—102	..	..
284,975	"	"	5	5	Do. max. div.	83—86	..	..
492,270	"	Feb. 19	6	9	Derby Con.	110—112*c*	..	..
55,000	"	Jan. 8	4	4	Do. Deb.	74—76*c*	..	..
1,002,180	10	July 23	4	6	European, Ltd.	6½—7½*	..	6⅞—7
16,460,070	Stk	Feb. 19	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	82—84	−1	83—84
2,600,000	"	"	3⅜	3⅜	Do. 3½ p.c. max.	61—64	..	61—61½
4,062,235	"	"	4	4	Do. 4 p.c. Con. Pref.	77—80	..	77½—79
4,761,930	"	June 11	3	3	Do. 3 p.c. Con. Deb.	58—61	..	58½—60½
130,000	"	—	10	10	Do. 10 p.c. Bonds	..	..	..
42,000	"	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	"	Mar. 19	6½	6½	Hastings & St. L. 5 p.c. Conv.	92—97	..	94—94½
258,740	"	"	5⅛	5⅛	Do. 3½ p.c. Conv.	73—78	..	..
70,000	10	May 7	10	10	Hongkong & China, Ltd.	17½—18½	..	18
86,600	Stk.	Mar. 5	10	10	Hornsey 7 p.c.	136—141	..	..
1,976,000	"	May 21	10	59	Imperial Continental Cap.	138—143	..	139—141½
226,170	"	Feb. 5	3½	3½	Do. 3½ p.c. Red. Deb.	71—74	..	..
235,242	"	Mar. 19	6½	6½	Lea Bridge 5 p.c. Ord..	96—101	..	..
2,127,340	"	Feb 19	5½	5½	Liverpool 5 p.c. Ord.	84½—85*b*	−1½	84½
600,000	"	Mar. 19	7	7	Do. 7 p.c. Red. Pref.	103½—104½*b*	..	..
165,736	"	Feb. 19	9	8	Maidstone 5 p.c. Cap.	122—132	..	..
63,480	"	June 25	3	3	Do. 3 p.c. Deb.	55—60	..	..
75,000	5	June 25	5	7	Malta & Mediterranean	4—4½	..	..
541,920	Stk.	June 11	4	4	Montevideo, Ltd.	65—69	..	67—68½
2,061,315	"	Mar. 5	5	5	Newcastle & Gateshead Con.	70—71*d*	+½	..
300,929	"	"	4	4	Do. 4 p.c. Pref..	77—78*d*	..	..
529,705	"	June 23	3½	3½	Do. 3½ p.c. Deb.	66—68*d*	−1	..
15,000	"	Mar. 5	11	12	North Middlesex 10 p.c.	..	..	..
75,940	"	"	7⅞	8⅝	Do. 7 p.c.	..	..	..
300,000	Stk.	May 7	9	7	Oriental, Ltd.	100—105	..	103
188,120	"	June 25	7⅛	7½	Plym'th & Ston'house 5 p.c.	108—113	..	..
60,000	50	Mar. 5	13	14	Portsea Island B	96—99	..	..
100,000	50	"	12	13	Do. C	93—98	..	..
2,289,909	1	—	—	—	Primitiva Ord.	8/6—9/6	+-/3	8/6—9/1½
302,600	100	June 2	4	4	Do. 4 p.c. Red. Deb..	78—80	..	..
600,000	Stk.	July 23	4	4	Do. 4 p.c. Red. Deb. 1911	62—64*	..	..
193,744	"	June 25	4	4	Do. B. Aires 4 p.c. Rd. Db.	63—65	..	..
264,496	"	"	4	4	Do. R'r P'te 4 p.c. Rd. Db.	63—65	..	64
150,000	10	Mar. 19	6	6	San Paulo 6 p.c. Pref.	7½—8½	..	8—8½
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	42—45	..	42½—43½
270,000	Stk.	Mar. 19	3½	3½	Sheffield A	104—106*s*	..	..
419,968	"	"	3½	3½	Do. B	104—106*s*	..	..
1,047,000	"	"	3½	3½	Do. C	104—106*s*	..	..
90,000	10	June 11	6	4	South African	7—9	..	..
6,609,895	Stk.	Feb 19	5	6½	South Met. Ord.	91½—93½	..	92—92⅞
1,895,445	"	July 9	3	3	Do. 3 p.c. Deb.	57—60	..	58½
734,000	"	Mar. 5	6½	6½	Do. 6½ p.c. Red. Deb.	102½—104½	..	103
91,500	"	Mar. 5	8½	8½	South Shields Con.	135—136*d*	..	..
1,187,795	"	July 23	6½	6½	South Suburban Ord. 5 p.c.	92—97*	+2	94—94½
368,837	"	June 25	5	5	Do. 5 p.c. Deb.	93—96	..	93
647,740	"	May 7	5	5	South'mpt'n Ord. 5 p.c. max.	80—83	..	..
121,275	"	June 25	4	4	Do. 4 p.c. Deb.	70—75	..	..
250,000	"	Mar. 5	7	7	Swansea 7 p.c. Red. Pref..	102—104	..	..
200,000	"	June 25	6½	6½	Do. 6½ p.c. Red. Deb..	100—102	..	..
120,000	"	July 23	8	7½	Tottenham District A 5 p.c.	113—116*	..	..
882,275	"	"	6½	5½	Do. B 3½ p.c.	90—95*	..	91
150,000	"	July 9	—	28/4	Do. 5½ p.c. Pref.	103—105	..	..
181,255	"	June 11	4	4	Do. 4 p.c. Deb.	76—79	..	..
258,251	"	Mar. 19	5	5	Tynemouth Con. and New	74—76*d*	..	..
					Uxbridge, Maidenhead, &			
197,294	"	Feb. 19	6½	6½	Wycombe 5 p.c..	95—100	..	..
88,330	"	"	5	5	Do. 5 p.c. pref.	95—100	..	..
91,800	"	"	—	6½	Do. 5 p.c. Maidenh'd	90—95	..	..
					Wandsworth, Wimbledon,			
					and Epsom—			
30,000	"	July 9	9½	8½	Wandsworth A 5 p.c.	123—128	−4	124
255,636	"	"	7½	7	Do. B 3½ p.c.	107—112	..	..
392,955	"	"	6/9/6	5/19/0	Do. C and New	93—96	..	..
352,000	"	"	7½	6½	Wimbledon 5 p.c.	102—105	..	102
98,000	"	"	7⅛	7½	Epsom 5 p.c..	109—112	..	..
88,416	"	June 25	3	3	5 p.c. Deb.	56—59	..	..

Quotations at :—*a*.—Bristol. *b*.—Liverpool. *c*.—Nottingham. *d*.—Newcastle. *s*.—Sheffield. * Ex. div.

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Rowley Regis Purchase Question.—At a meeting of the Rowley Regis Urban Council last week, a resolution was moved for the appointment of a Special Committee to go into the question of taking over the gas-works. The resolution was carried; and it was decided that the Committee should consist of the whole of the members of the Council.

New Carbonizing Plant for Malvern.—The Malvern Urban District Council have decided to recommend the installation of new carbonizing plant at the gas-works; an application to borrow £17,500, the estimated cost of the scheme; and the acceptance of the tender of the Woodall-Duckham Vertical Retort and Oven Construction Company.

Dublin Gas Company's Claim.—In the matter of a claim by the Alliance and Dublin Consumers' Gas Company for compensation in respect of loss of gas through the destruction of mains in the centre of the city and at the Four Courts during the revolutionary fighting of 1922, Judge Dromgoole, in the Dublin Circuit Court, has reported to the Free State Government in favour of an award of £4449 18s. 11d.

Shrewsbury Gas-Works Purchase Inopportune.—The Finance Committee reported to the Shrewsbury Town Council last week on a suggestion that the undertaking of the Shrewsbury Gas Light Company should be purchased. They stated that they considered the time inopportune, having regard to prospective changes in carbonization of coal, and to the possibility of obtaining cheap electricity from super-power stations.

Cleveland Gas Company.—The profit of the Company for the half-year ended June 30 amounted to £969, making with the sum brought forward £3207 at credit of profit and loss account. Under the abnormal conditions now existing in the coal mining industry, the Directors consider it the safest policy to carry this amount to the current accounts—allowing the question of a dividend to stand over until the results of the present half-year's working are known.

Good Results at Hebden Bridge.—Speaking at the annual meeting of the Hebden Bridge and Mytholmroyd Gas Board (Yorks.), the Chairman, Councillor A. Sutcliffe, J.P., stated that the output for the past year, 117,319,000 c.ft., was a record. The position was highly satisfactory, and financially business was very sound. A sum of £7000 was being spent on new vertical retorts. During the past year the price of gas for all purposes had been considerably reduced.

Thefts from Slot Meters.—At Redditch, on Friday last, Charles Padbury, a gasfitter employed by the Redditch Gas Company, was fined £3 in each of three cases for stealing sums of money from prepayment meters. Defendant pleaded guilty. It was stated that defendant, who had no authority to collect money, went to houses and represented that he had been sent to test the gas pressure. He examined the meter, and as he left remarked "I do not think you will have any more trouble." An inspection disclosed the fact that certain money was missing from the meters.

Lancaster Gas-Works Extensions.—The Gas Committee of the Lancaster Corporation have had before them proposed extensions of the gas-works, costing £54,000. It was reported by the Engineer (Mr. G. Dixon) that towards this there was £32,000 in the reserve fund; and the scheme would probably be eligible for a grant of 50 p.ct. of the interest on loans raised to meet the cost, including the reserve fund, over a period of fifteen years. The Engineer submitted details of types of carbonizing plant; and, after consideration, it was resolved that, subject to a grant in aid of the extensions being received from the Unemployment Grants Committee, the Council be recommended to expedite the proposed extensions, and to authorize the acceptance of the tender of the Woodall-Duckham Company, amounting to £40,356, for chamber ovens and house, coal breaking and handling plant, coke plant and bunkers, and waste-heat boiler.

Explosion at Birmingham Motor Works.—A recent explosion at the works of the Treloggan Motor Accessories Company, at Moseley, Birmingham, resulted in the death of Mr. A. H. Treloggan, the proprietor. At the inquest on Thursday last, before Mr. Isaac Bradley, Coroner for Birmingham, evidence was given that additional plant had been installed at the works, and that the gas meter was not large enough for the additional supply of gas required. Mr. Alfred Kinsey, Manager, said that for some weeks Mr. Treloggan had been installing a furnace for case-hardening steel motor parts, and the work was completed on the day the explosion occurred. Mr. H. R. Hems, of the Industrial Research Laboratory of the Birmingham Gas Department, said the Department knew nothing about the furnace until after the explosion had occurred. He had formed the opinion that the explosion was due to the gas and air mixture. There was evidence of an explosion having taken place in the small receiver that formed part of the oven. No explosion had taken place inside the gas meter. The meter was subjected to too great a strain by the quantity of gas used, and as a result the meter failed. In all probability the lights were extinguished, and when the meter resumed its function there was an escape of gas. An explosive mixture was set up, and the application of a light caused an explosion. For Mr. Treloggan's installation a meter four times the capacity of that in use was required. Mr. Treloggan would have been advised as to the correct meter had application been made to the Department. A verdict of "Accidental death" was returned.

The Liskeard Gas and Electricity Company, Ltd., has been registered, with a capital of £8000 in £1 shares.

Exhibition at Knutsford.—A bright little exhibition of gas appliances was held in Knutsford Town Hall recently, arranged for the Knutsford Gas and Water Company by the Davis Gas Stove Company, Ltd., the Richmond Gas Stove and Meter Company, Ltd., and John Wright & Co. A series of demonstrations of modern cooking was given twice each day by Miss Sketchley, and proved a great attraction to the public. A wide range of gas appliances was displayed, including "New World Junior," "Ranelagh," and "Front Lines" gas cookers, gas fires, circulators, &c.

Sheffield's Industries.—One of the periodical industrial supplements to the "Financial Times" appeared last Friday, and dealt with the business activities of the important city of Sheffield. A column was rightly devoted to the work of the Sheffield Gas Company, who, it is pointed out, early recognized the necessity of educating the manufacturing community in the use of town gas for industrial heating. In 1909 they opened their first experimental room for practically demonstrating the possibilities of gas as fuel. The Company's effort met with such a favourable reception that two years later it was found necessary to remove into premises which were larger and better equipped for dealing with the practical side of furnace work. Since that date the premises have been further extended; and the present furnace rooms are fitted with all the necessary appliances and instruments for making, and accurately observing the results of, any test likely to be of interest to Sheffield traders. Thanks to this initiative, to-day town gas is generally recognized as the most desirable heating agent in many industries for numerous processes. In Sheffield alone, over 2000 gas furnaces are in constant use throughout the year; and 1500 of these have been supplied by the Gas Company. Gas for industrial purposes is sold at prices ranging from 7d. to 4d. per therm.

For the work in connection with the extension of the Finsbury gas meter testing office, the Public Control Committee of the London County Council have decided to accept the tender of Messrs. Griggs & Son, of Westminster.

On the evening of July 22 lightning struck the electric switch in the office of Superintendent Woodcock, at the West Riding Police Court, Hall Ings, Bradford, and the current travelled along electric wires to the Superintendent's house adjoining, and melted about a yard of gas pipe. A slight fire broke out, but was quickly subdued.

The Cardiff Gas Company's Athletic and Social Club carried through an excellent annual sports programme last Saturday week, on the gas-works recreation ground. The attendance was very good, and the number of entries constituted a record. The prizes were distributed by Mr. Charles E. Dovey, J.P. (the Chairman of the Company).

The Gas Committee reported to the last meeting of the Barrow Town Council, in connection with the laying of gas mains on Walney Island, that a canvass had been made of the residents on the island to ascertain the probable number of gas consumers, and that the percentage was 85·5. The work of taking gas to the island is going forward.

Following upon the report of a Departmental Committee as to the organization of the Public Control Department of the London County Council, the Public Control Committee suggest that the Inspecting Gas Examiner should come under the direction of the Establishment Committee; that in view of the increased burden of responsibility, the scale of salary attaching to the position should be increased; and that a qualified deputy should be appointed.

At a meeting of the Morecambe Corporation Gas Committee a letter was read from the Morecambe and Heysham Master Builders' Association protesting against direct labour by the Gas Committee in the erection of new offices, and payment of wages in excess of the standard rate. The Committee left the matter in the hands of a Sub-Committee to investigate and report. A letter was received also from the Morecambe Branch of the United Operative Plumbers' Association of Great Britain and Ireland protesting against the Corporation executing plumbers' work in the fixing of gas appliances. The reply was that the Gas Committee reserve the right to trade in and fix gas appliances in connection with their undertaking and the consumers.

Arthur Harold Smyth, of the Public Lighting Department of the Tottenham District Light, Heat, and Power Company, was, at the Gas Company's sports, presented by Mr. G. Hay Morgan, M.P., with a certificate from the Protection of Life from Fire Society and a cheque for £3 3s. While cleaning a lamp in Middlesbrough Road, Edmonton, Smyth heard a woman scream "Fire!" Jumping on his bicycle and taking his ladder, he went to No. 25, Sandal Road, from the bedroom window of which smoke was issuing. Smoke and flames prevented him going up the stairs. Hoisting his ladder against the outside wall, he smashed the upstairs window with his fist, climbed through, and rescued Ernest and Harold Grainger, twins, aged 3½ years. After placing them in safety, he assisted in extinguishing the fire. He went off without giving his name and address; and it was only through the mother of the children communicating with the Company that his identity was established.

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